

STUDER

A800

**SERVICEANLEITUNG
SERVICE INSTRUCTIONS**



VORWORT

Dieses Buch ist eine Neubearbeitung
der Serviceanleitung 23.266.682 .

PREFACE

This book is a revised edition of the
service instructions manual 23.266.682 .

Prepared and edited by

STUDER REVOX
Technical documentation
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We reserve the right to make alterations

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Zubehör, Bestellinformationen, Tech-
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BUS ANALYZER

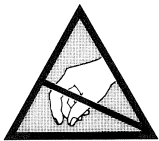
Funktionsbeschreibung, DIL-Schalter,
Bedienungsanleitung, Address Listing

Functional description, DIL-switches,
operating instructions, address listing

Behandlung von MOS-Bauteilen

MOS-Bausteine sind besonders empfindlich auf elektrostatische Ladungen. Folgende Punkte sind daher zu beachten:

1. Elektrostatisch empfindliche Bauteile werden in Schutzverpackungen transportiert und gelagert. Auf der Schutzverpackung ist untenstehende Etikette angebracht:

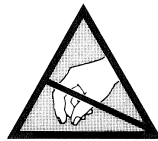


2. Jeglicher Kontakt der Elementanschlüsse mit Kunststofftüten und -folien aus Styropor oder ähnlich elektrostatisch aufladbaren Materialien ist unter allen Umständen zu vermeiden.
3. Elementanschlüsse nicht oder nur mit geerdetem Handgelenk berühren.
4. Als Arbeitsunterlage eine geerdete leitende Matte verwenden.
5. Printkarten nicht bei eingeschaltetem Gerät ein-, oder ausstecken.

Handling MOS components

MOS components are extremely sensitive to static charges. Please observe therefore the following regulations:

1. Components sensitive to static charges are stored and shipped in protective packages. On the package you find the subsequent symbol:



2. Avoid any contact of connector pins with foam packages and -foils made of styropor or similar chargeable package material.
3. Don't touch the connector pins when your wrist is not grounded with a conducting wristlet.
4. Use a grounded conducting mat when working with sensitive components.
5. Never plug or unplug PCBs containing sensitive components when the machine is switched on.

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SICHERHEIT

Durch Entfernen von Gehäuseteilen, Abschirmungen etc. werden stromführende Teile freigelegt. Aus diesem Grunde müssen die folgenden Sicherheitsvorschriften unbedingt beachtet werden:

1. Eingriffe in ein Gerät

dürfen nur von Fachpersonal vorgenommen werden.

2. Vor Entfernen von Gehäuseteilen:

Gerät ausschalten und vom Netz trennen.

3. Bei geöffnetem Gerät:

- Netzteil- oder Motorkondensatoren mit einem passenden Widerstand entladen.
- Bauteile grosser Leistung, wie Leistungstransistoren und -widerstände sowie Magnetspulen und Wickelmotoren erst nach dem Abkühlen berühren.

4. Servicearbeiten bei geöffnetem, unter Spannung stehendem Gerät:

- Keine blanken Schaltungsteile berühren
- Isolierte Werkzeuge verwenden
- Metallene Halbleitergehäuse nicht berühren, da sie hohe Spannungen aufweisen können.

ERSTE HILFE (bei Stromunfällen)**1. Bei einem Stromunfall die betroffene Person raschmöglichst vom Strom**

- Durch Ausschalten des Gerätes
- Ausziehen oder Unterbrechen der Netzzuleitung
- Betroffene Person mit isolierendem Material (Holz, Kunststoff) von der Gefahrenquelle wegstossen
- Nach einem Stromunfall sollte immer ein Arzt aufgesucht werden.

ACHTUNG

EINE UNTER SPANNUNG STEHENDE PERSON DARF NICHT BERÜHRT WERDEN, SIE KÖNNEN DABEI SELBST ELEKTRISIERT WERDEN!

2. Bei Bewusstlosigkeit des Verunfallten:

- Puls kontrollieren,
- bei ausgesetzter Atmung künstlich beatmen,
- Seitenlagerung des Verunfallten und Arzt verständigen.

SAFETY

There are no user serviceable components inside the equipment, live parts are laid open when removing protective covers and shieldings. It is essential therefore to ensure that the subsequent safety rules are strictly observed when performing service work or repairs.

1. Servicing of electronic equipment

must be performed by qualified personnel only.

2. Before removing covers:

Switch off the equipment and unplug the mains cable.

3. When the equipment is open:

- Discharge power supply- and motor capacitors through a suitable resistor.
- Components, that carry heavy electrical loads, such as power transistors and resistors as well as solenoid coils and motors should not be touched before a cooling off interval, as a precaution to avoid burns.

4. Servicing unprotected and operating equipment:

- Never touch bare wires or circuitry
- Use insulated tools only
- Never touch metal semiconductor cases because they may carry high voltages.

FIRST AID (in case of electric shock)**1. Separate the person as quickly as possible from the electric power source:**

- by switching off the equipment,
- unplugging or disconnecting the mains cable,
- pushing the person away from the power source by using dry insulating material (such as wood or plastic).
- After having sustained an electric shock, always consult a doctor.

WARNING:

DO NOT TOUCH THE PERSON OR HIS CLOTHING BEFORE POWER IS TURNED OFF, OTHERWISE YOU STAND THE RISK OF SUSTAINING AN ELECTRIC SHOCK AS WELL!

2. If the person is unconscious

- Check the pulse,
- reanimate the person if respiration is poor,
- lay the body down and turn it to one side, call for a doctor immediately.

SÉCURITÉ

Si les couvercles de protection sont enlevés, les parties de l'appareil qui sont sous tension ne sont plus protégées. Il est donc d'une nécessité absolue de suivre les instructions suivantes:

1. Les interventions dans les appareils électriques

doivent être faites uniquement que par du personnel qualifié

2. Avant d'enlever les couvercles de protection:

Couper l'interrupteur principal et débrancher le câble secteur.

3. Après avoir enlevé les couvercles de protection:

- Les condensateurs de l'alimentation et des moteurs doivent être déchargés à l'aide d'une résistance appropriée.
- Il est prudent de laisser refroidir les composants de haute puissance, par ex.: transistors de puissance, résistances de puissances de même que des électroaimants et les moteurs de bobinage.

4. S'il faut que l'appareil soit sous tension pendant les réglages internes:

- Ne jamais toucher les circuits non isolés
- Travailler seulement avec des outils isolés

PREMIERS SECOURS (en cas d'électrocution)**1. Si la personne est dans l'impossibilité de se libérer:**

- Couper l'interrupteur principal
- Couper le courant
- Repousser la personne de l'appareil à l'aide d'un objet en matière non conductrice (matière plastique ou bois)
- Après une électrocution, consulter un médecin.

ATTENTION

NE JAMAIS TOUCHER UNE PERSONNE QUI EST SOUS TENSION, SOUS PEINE DE SUBIR ÉGALEMENT UNE ÉLECTROCUTION!

2. En cas de perte de connaissance de la personne électrocutée:

- Contrôler le pouls
- Si nécessaire, pratiquer la respiration artificielle
- Mettre l'accidenté sur le côté latérale et consulter un médecin.

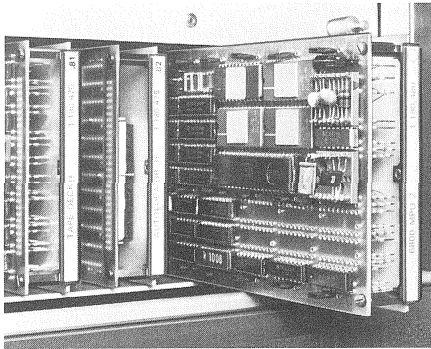
STUDER A800 Professionelle
Mehrkanal-Studio-Tonband-
maschine

STUDER A800 Professional
Multichannel Magnetic Tape
Recorder

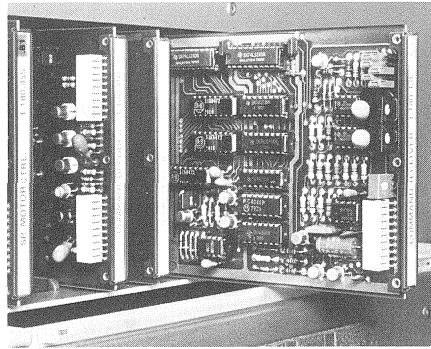


STUDER A800 Professionelle Mehrkanal-Studio-Tonband- maschine

STUDER A800 Professional Multichannel Magnetic Tape Recorder

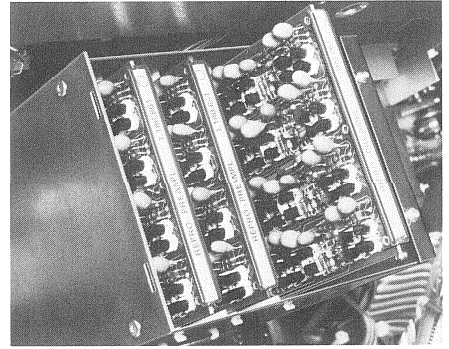


1.
steckbar ...
Mikroprozessor-Einheit



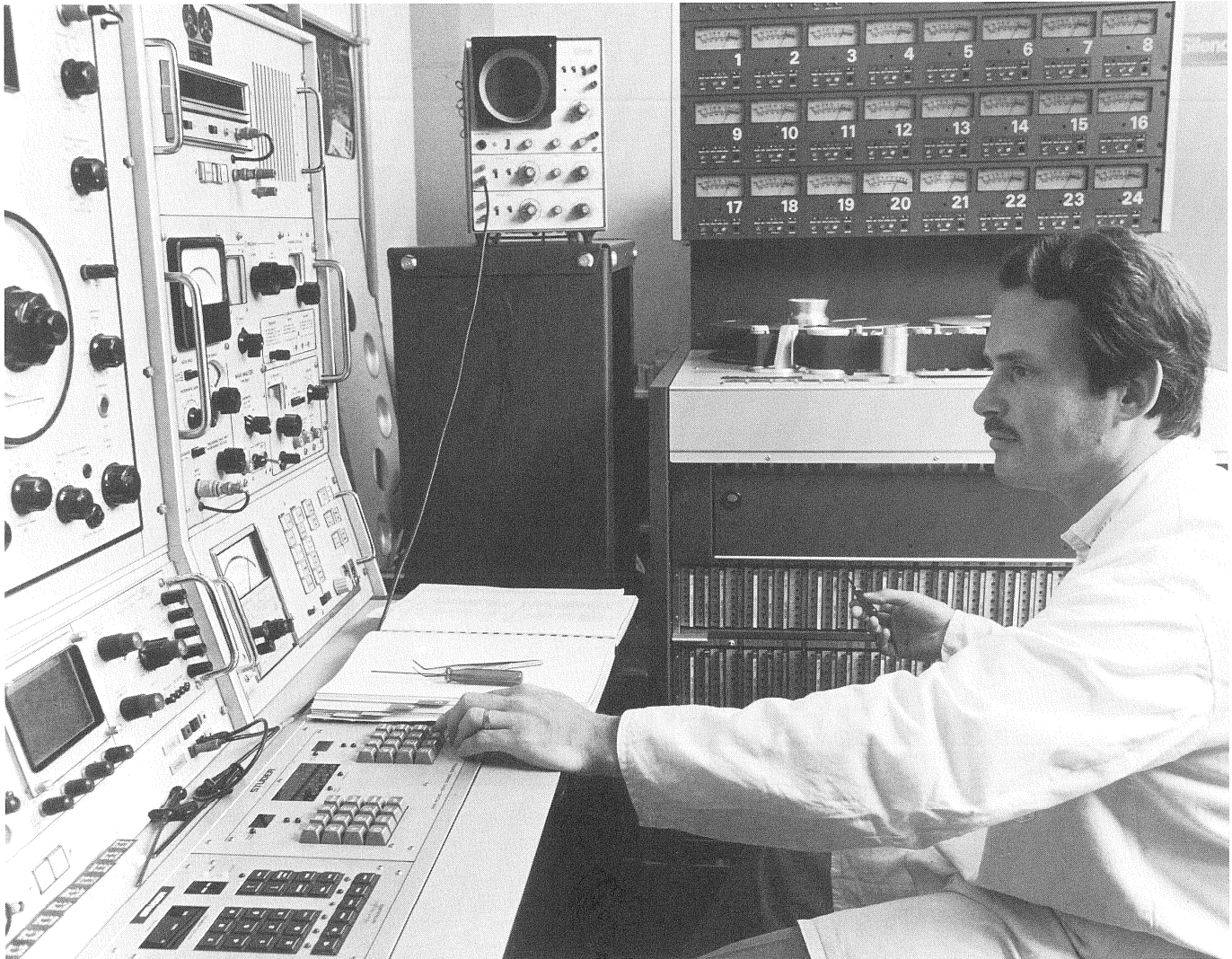
2.
steckbar ...
Laufwerk-Steuerung

2.
plug-in ...
Tape Deck Electronics



3.
steckbar ...
Wiedergabe-Vorverstärker,
direkt unter dem Kopfträger

3.
plug-in ...
Reproduce Preamplifiers, directly
located beneath the head assembly



4.
Jede A800 wird nach Kundenspezifikationen eingestellt. Abschliessend werden alle garantierten Daten vollständig geprüft.

4.
Each A800 is aligned according to the customers indications. Finally the guaranteed specifications are completely checked.

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STUDER A800 Professionelle Mehrkanal-Studio Tonbandmaschine

Allgemeines

Vollständig neu entwickelt für höchste

Stabilität in der Konstruktion, grosse

Kapazität in der Aufzeichnung, beste

Flexibilität in der Anwendung und optimale

Schnelligkeit im Arbeitsablauf und in der
Bedienung.

A800 – Stabilität

Extrem verwindungsfreies Leichtmetallguss-
Chassis für höchste Präzision bei strengster Be-
anspruchung.

A800 – Kapazität

14"-Bandspulen (360 mm), mit koaxialer
Schnellverriegelung.

A800 – Flexibilität

Zentrale Mikroprozessor-Steuerung (μ P) für
Laufwerk und elektronisches Schneiden.

Vom μ P werden sämtliche Befehle von Eingabe-
Einheiten – ob lokal oder fern – sowie von
Zusatzgeräten verarbeitet.

STUDER A800 Professional Multichannel Magnetic Tape Recorder

General

Entirely new-designed concept, featuring out-
standing

mechanical stability

14" reel capacity

high user flexibility

ease of operation

very fast responding transport

A800 – Mechanical Stability

Extremely rugged diecast chassis for excellent
performance stability.

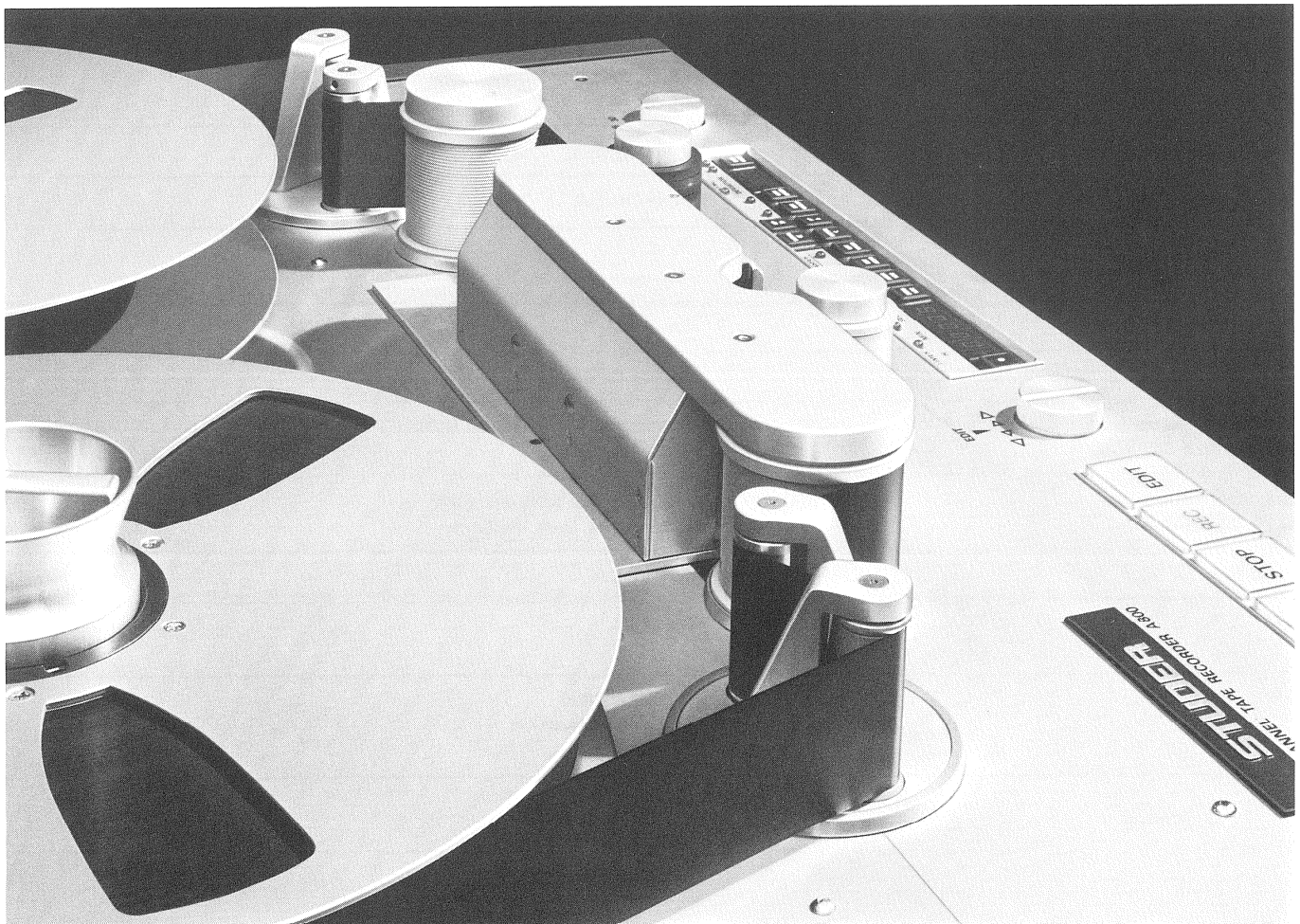
A800 – Reel Capacity

14" reel capacity (360 mm), newly designed
hubs allowing quick changeover of reels.

A800 – User Flexibility

Microprocessor-controlled transport electronics.

The microprocessor processes all commands re-
ceived from local controls, remote controls or
peripheral equipments.



A800 — Schnelligkeit

Schnelles, verzögerungsfreies Arbeiten wird erreicht durch hohe Umspulgeschwindigkeiten und ausserordentlich kurze Reaktionszeiten.

Schnelles Einmessen beim Wechseln der Bandtype durch zentrale Einstellung der Vormagnetisierung.

Zentral gesteuerte, elektronische Normumschaltung.

Schnelles und zuverlässiges, elektronisches Schneiden.

A800 — Fast-responding Transport and Ease of Operation

Designed for all applications where fast and rapid action is required. Some of the features include:

Spooling motors with very high torque, featuring high winding speed and fast reaction time. Fast line-up due to "Master Bias Setting".

NAB/CCIR switchable by means of master switch.

Electronic editing.

Anordnung der A800-Einheiten

Kompakter Aufbau in fahrbarer Konsole.

Laufwerkchassis schwenkbar für einfachen Service.

Die zentrale μ P-Steuerung (1) befindet sich direkt unter dem Laufwerkchassis, zusammen mit der Laufwerksteuerung (2) in einer gemeinsamen, schwenkbaren Kassette.

Elektronischer Zähler, Zero-Locator, Address-Locator und Varispeed-Einheiten (3) sind direkt neben den grossflächigen Laufwerk-Drucktasten (4) angeordnet.

Unterhalb des Laufwerkes — unmittelbar unter dem Kopfträger — ist die abgeschirmte Einheit der Wiedergabe-Vorverstärker (5) zugänglich. Die Audio-Elektronik (6) ist unter dem Laufwerk in 2 Ebenen (16-Kanal), resp. 3 Ebenen (24-Kanal) angeordnet. Die ganze Steckkarten-Kassette ist nach unten schwenkbar. Je 4 Printkarten (Europaformat) bilden eine Kanaleinheit. Oberhalb des Laufwerkes — in bequemer Sichthöhe — sind die VU-Meter-Einheiten (7) mit dazugehöriger Kanalsteuerung konzentriert.

Im VU-Meter-Aufbau über dem Laufwerk sind in der obersten Ebene (8) die Bedienelemente für übergeordnete Steuerungen zusammengefasst.

Von hinten zugänglich sind die Netzteile und die Verzögerungseinheit (Delay Unit) (9) für den elektronischen Schnitt.

Sämtliche Audio-, Fernsteuerungs- und TLS-Anschlüsse sind ebenfalls von hinten zugänglich.

Die Netzteile werden sequentiell eingeschaltet; die Audionetzteile mittels Triacs im Nulldurchgang der Netzspannungsinuswelle. Damit werden Störungen über das Netz auf externe Geräte mit bestmöglicher Sicherheit vermieden.

Mechanical Construction and Location of A800 Modules

Compact construction, console mounted with casters.

Rotatable transport featuring ease of service.

The "brain" of the machine — the μ P (1) — is located right under the transport in a card rack, which also contains all electronics (2), controlling the transport.

Electronic timer, Zero Locator, Address-Locator and Varispeed control unit (3) are located next to the large push-button assembly (4) controlling the basic transport functions.

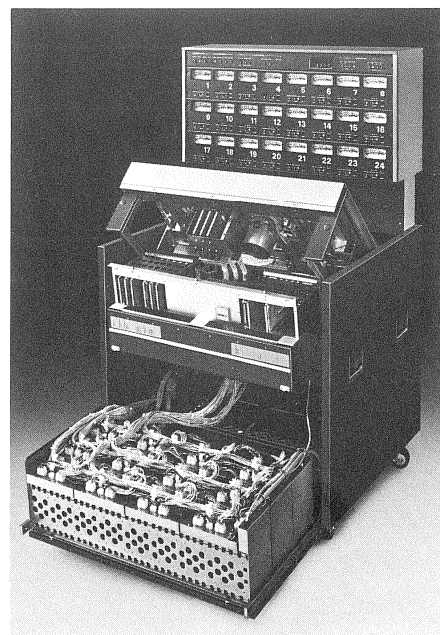
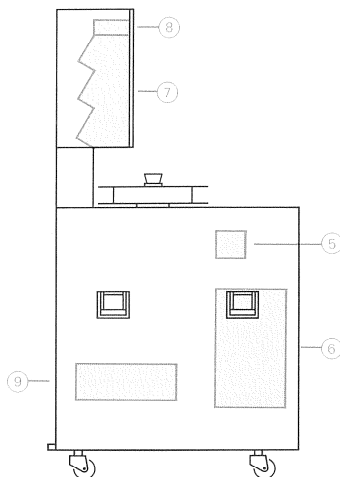
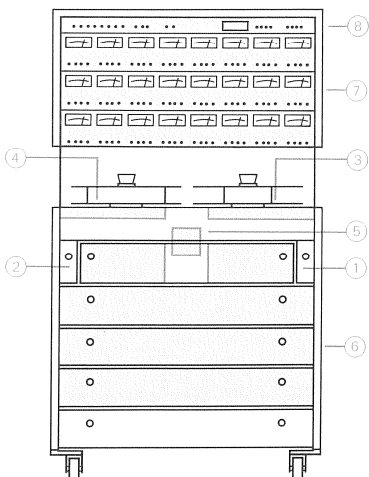
A small, shielded box is installed below the transport, just underneath the head assembly, containing the reproduce preamplifier (5).

The main audio electronics (6) are located beneath the transport in rows of 8 channels, 2 rows of electronics for a 16-channel machine, 3 for a 24 track machine. The entire rack, containing all electronics can be tilted for easy servicing. 4 printed circuit boards of European standard format for 1 channel unit.

Clearly visible for the operator, the VU-meter panel (7) — including all operational controls for the electronics — is located above the deck.

Another control panel (8) sits on top of the VU-meter panel. It contains all master controls for the audio electronics, the operating switches and the controls for the optional code channel. All audio, transport and TLS 2000 control In- and Outputs (9) are easily accessible from the rear of the machine.

Power supplies are turned on in sequence, by means of Triacs, eliminating possible noise and spikes induced into the mains line.



STUDER A800 – Laufwerk

Das A800 Bandtransportsystem ist vollkommen neu konzipiert für

schnelles Arbeiten

Gleichstrom-Scheibenläufer-Wickelmotoren mit hohem Drehmoment garantieren reaktions-schnelle Start- und Bremsvorgänge sowie eine hohe Umspulgeschwindigkeit.

14" (360 mm) grosse Bandspulen

Fassungsvermögen und Geschwindigkeit entsprechen einer modernen MAZ. Die A800 ist in ihrer Konzeption ideal geeignet für das STUDER Tape Lock System 2000 oder andere Video-Audio, Audio-Audio und Film-Audio Synchronisierungssysteme.

Modernste Laufwerksteuerung

Grösste Flexibilität des A800-Systems ist durch den Einsatz eines

Mikroprozessors (μP)

gegeben. Damit entfällt die festverdrahtete, starre Laufwerk-Steuerung zugunsten einer "intelligenten", anpassungsfähigen Logik.

STUDER A800 – Transport

The transport system of A800 is an entirely novel concept and design, featuring:

Extremely fast reaction times, enabling rapid working

DC spooling motors with very high torque, featuring fast reaction times and high winding speed.

14" (360 mm) reel capacity

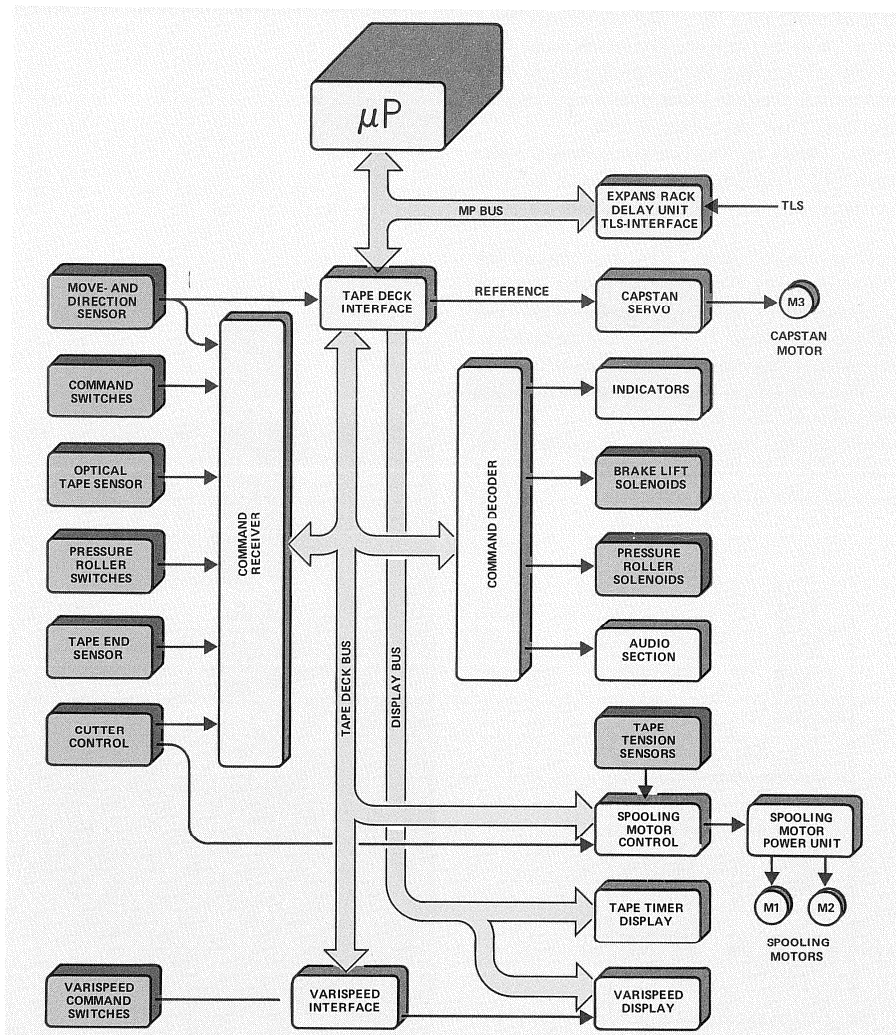
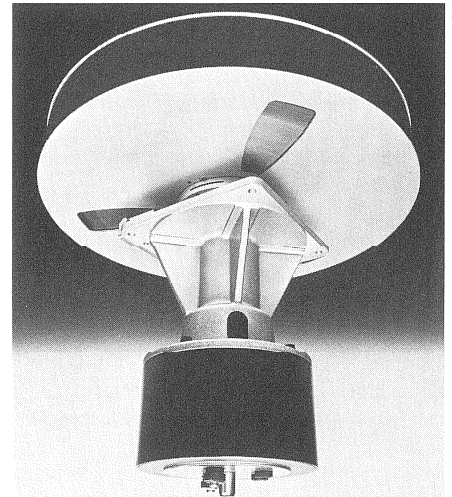
Reaction time and reel capacity like a modern VTR. This concept is ideal for operation with the STUDER Tape Lock System 2000 or in any Video-Audio, Audio-Audio or Film-Audio synchronization application.

Transport Control Featuring the Technology of Tomorrow

Greatest flexibility of the A800 concept is obtained by using a

Microprocessor (μP)

The hard-wired transport control has been eliminated and been replaced by a new flexible and "intelligent" logic. With the functional

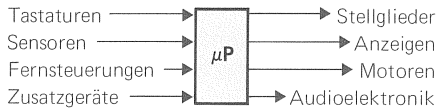


Block-Diagramm der Laufwerksteuerung
Block Diagram of Tape Transport Control

Diese öffnet völlig neue Wege, weil die Parameter der Funktionen nun durch die Software bestimmt werden. Damit erreichen wir einen fast beliebigen Zugriff in die dynamischen Funktionsabläufe von Laufwerk- und Audioelektronik. Das Resultat ist eine Optimierung der Laufwerkbewegungsabläufe, der Audio-schaltfunktionen und der externen Steuerungsmöglichkeiten, wie sie bisher nicht für realisierbar gehalten wurden.

Dadurch ist nicht nur das "handling" mit der A800 angenehm und produktiv zugleich, auch die maximale Schonung des wertvollen Bandmaterials gehört zum konsequent konzipierten System.

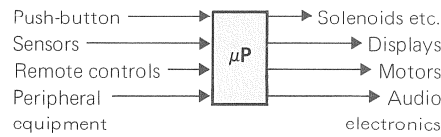
Prinzipieller Aufbau der Steuerung:



Der μP verarbeitet als zentrale Recheneinheit alle Befehle und steuert über verschiedene BUS-Systeme alle Laufwerk- und Audioeinheiten; er erzeugt Referenzspannungen und -frequenzen und aktiviert alle wichtigen Anzeigen als Zustands-Rückmeldungen. Über ein spezielles Expansions-Rack stellt der μP auch die Verbindung zur zusätzlichen Verzögerungseinheit (Delay Unit) oder zum externen "Tape Lock System" her und ermöglicht damit Synchronisieren und elektronisches Schneiden mit höchster Präzision.

parameters defined by software only, entirely new dimensions are opening up. The control system has been designed to provide optimal access to all functional controls of transport and audio electronics, resulting in a flexibility never achieved before.

Block diagram of the A800 control system:



The μP is the "brain" of the control system. All transport and electronic units are controlled via several BUS systems. It generates reference voltages and frequencies, and drives all status indicators and displays as well. A special rack is containing the delay unit and the code channel electronics with the TLS 2000 interface. Here, the microprocessor controls the exact timing of erase head and record head switching. Together with the TLS 2000 a perfect electronic editing becomes possible.

Laufwerk-Steuerelemente

Vor dem Laufwerk sind in einer Reihe übersichtlich und bedienungsfreundlich angeordnet: **Laufwerk-Steuertasten**, grossflächig; Tastenbeleuchtung als aktive Funktionsrückmeldung.

EDIT-Regler für variable Suchgeschwindigkeiten.

Zählerfeld mit:

Digital-Bandzähler (7-Segment) mit Vorzeichen, Anzeigebereich von -9:59:59 bis 9:59:59

Zero-Locator für automatisches Anfahren des Zähler-Nullstandes.

Address-Locator zum automatischen Anfahren einer programmierten Zählerstandadresse. Separate Tasten mit LED-Funktionsanzeige für:

*Zählerstand-Einstellung (SET TIMER)

*Programmieren der Adresse (SET ADDR)

Anfahren der programmierten Adresse (ADDR LOC)

*Direktes Eingeben eines aktuellen Zählerstandes in den Adress-Speicher (TRANSFER) durch gleichzeitiges Drücken der Tasten SET ADDR und SET TIMER.

Transport Control Elements

Designed in a most ergonomical way, all control elements are easily accessible.

Transport push-button assembly, large buttons, easy to handle, control the basic transport functions. Status indication.

Edit control assembly. Enables easy and fast location of a point of interest on tape. Search speed adjustable.

Timer assembly with:

Digital timer. 7-segment display with negative sign for "negative times". Range: -9:59:59 to 9:59:59.

Zero Locator. Automatic location to the 0:00:00 mark of the timer.

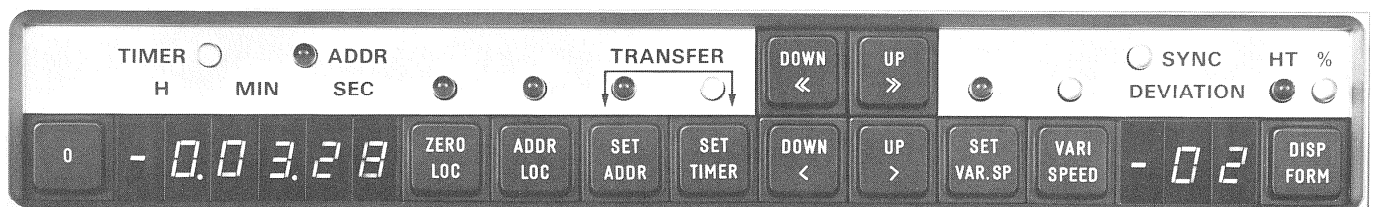
Address Locator. Automatic location of a pre-determined timer address. Separate control buttons with LED status indicators for:

*Timer setting (SET TIMER)

*Address setting (SET ADDR)

Locate address (ADDR LOC)

*Direct transfer of tape position counter reading into the ADDR memory (TRANSFER) by pushing SET ADDR and SET TIMER at the same time.



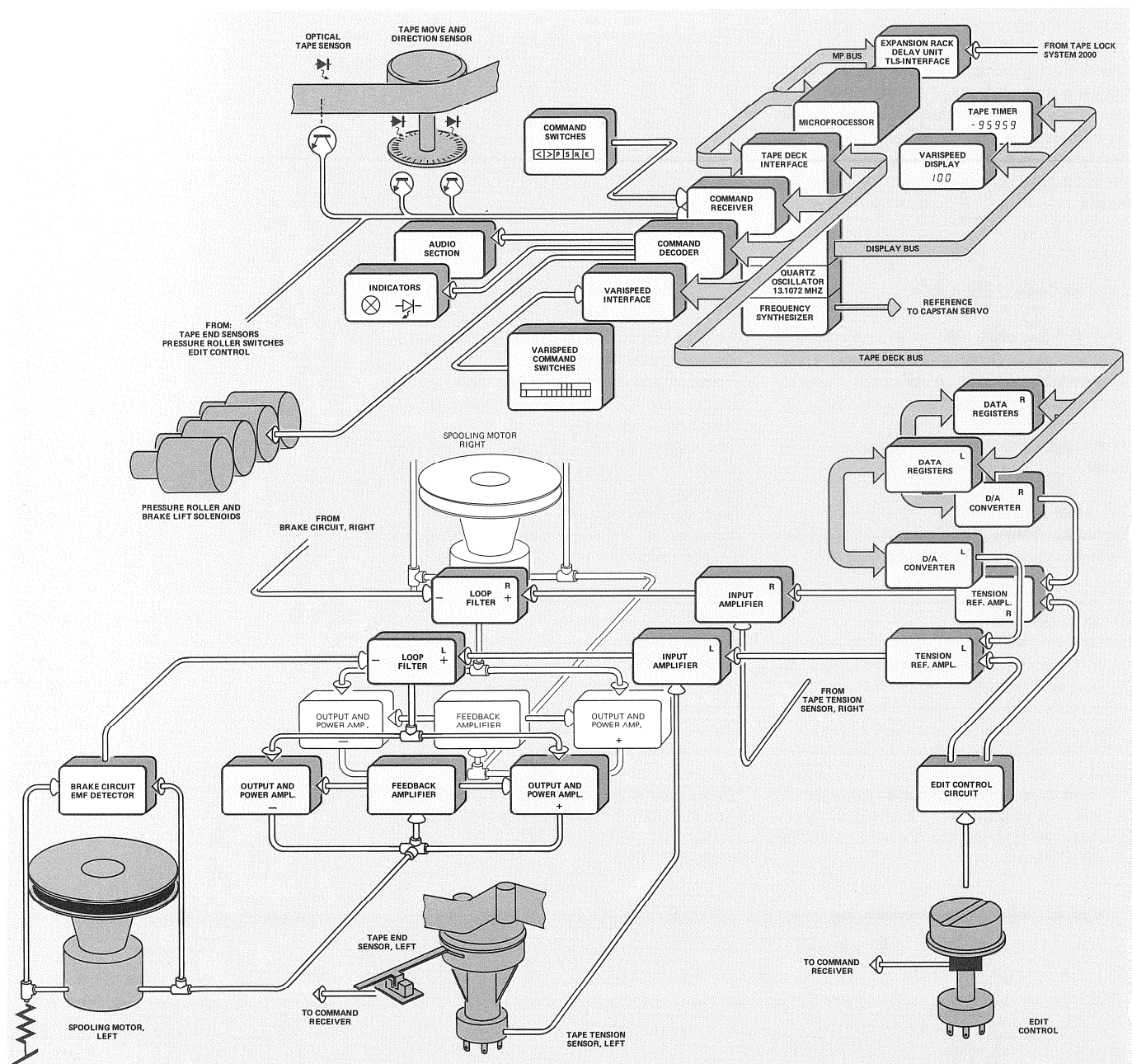
*Vier Tasten ermöglichen schnelles und langsames Setzen des Zählerstandes und der Geschwindigkeitsabweichung.

Eine Reihe von Sensoren liefert die Zustandsinformationen an den zentralen μP zur Überwachung und Steuerung der Funktionsabläufe:

*Four push-buttons permit slow or fast setting of timer and speed deviation display.

A number of sensors provide status information to the μ P and secure maximum safety and proper functional sequence.

Block Diagram of Spooling Motor Control and Sensors



Optischer Bandendschalter, liefert die Information, ob Band oder Transparentstelle vorhanden ist.

Bandbewegungs- und Richtungssensor, optoelektronisch, hohe Auflösung. Liefert die Information für die Auswertung, ob sich das Band bewegt, in welcher Richtung und wann es die Sollgeschwindigkeit erreicht hat (Play und Umspulen).

Bandzugsensoren, Präzisionspotentiometer; melden den aktuellen Bandzug. Die Stellgröße (Referenzspannung) wird vom μP in Form eines 6 BIT-Wortes in Funktion des Betriebszustandes geliefert.

Tonmotor-Drehzahl, induktive Abtastung. Die Sensoren liefern eine der Drehzahl proportionale Frequenz, die mit der quartz stabilen Referenz vom Frequenz-Synthesizer verglichen wird.

Messschaltung der Wickelmotor-EMK, liefert den Motorsteuerungen die Information zum elektrischen Abbremsen der auslaufenden Bandspule.

Abschirmklappe, Microswitch; für den Start müssen Bandendschalter, Bandzugwaagen und Abschirmklappe Bereitschaft melden (Abschirmklappe darf nach dem Start wieder geöffnet werden). Damit ist eine wirkungsvolle Sicherung für den Start gegeben (besonders wichtig bei Fernstart).

Optical end-of-tape sensor, senses presence of tape.

Tape direction and move sensor. High resolution due to photo-electric devices. It senses tape movement, tape speed and direction of movement.

Tape tension sensors. Precision potentiometers provide a voltage representing the actual tape tension. The reference voltage is generated by the microprocessor by means of a 6 BIT word depending on the functional status of the machine.

Capstan servo. 2 tachos provide a frequency proportional to the RPM of the capstan motor. A PLL circuit compares the tacho frequency with the crystal controlled synthesizer frequency.

Measuring circuit for spooling motor EMF. Provides control signal for electronic braking of the spooling motors after unthreading of the tape from wind mode.

Headshield. Interlocked with microswitch. Start of machine possible only if end-of-tape sensor, tape tension sensors and head shield indicate "Ready". (After machine has started, the headshield may be disengaged again.) Possible accidents (high torque of spooling motor) are eliminated to a great extent.

Laufwerk-Funktionen und Antrieb

STOP-Taste blinkt, solange kein Start möglich ist (Bandzugwaagen, Abschirmklappe).

Aufnahmestart, Tasten REC + PLAY oder nur REC (mit Jumper programmierbar). Von Aufnahme auf Wiedergabe direkt durch Drücken der Taste PLAY.

Wiedergabe- und Aufnahmestart sehr reaktions-schnell bei bester Schonung des Bandmaterials. Bei Aktivierung geht die Andruckrolle in Cutterstellung, die Wickelmotoren beschleunigen bis Bandbewegungssensor Sollgeschwindigkeit meldet, dann erfolgt Andruck ohne Bandbeanspruchung. Bei Aktivierung aus Vorspulen erfolgt der Übergang ohne Bandstopp bei Abbremsung auf Sollgeschwindigkeit.

EDIT, aktiviert die variable Suchgeschwindigkeit mit Edit-Regler. Bei Umspulen erfolgt Mithören, solange Taste gedrückt bleibt. Vom TLS über μP ansteuerbar für Code-Lesung.

Transport Functions and Servos

STOP button flashes, indicating no start possible (e.g. tape not threaded, headshield not closed etc.).

RECORD-Start. Enabling record possible by simultaneously pushing the PLAY and RECORD button or, pushing the RECORD button only (jumper selectable). Disabling of record function: simply press PLAY again.

PLAY/RECORD start feature. The A800 is designed to handle the tape as smoothly as possible during the start-up phase. Pushing the PLAY button brings the pinch roller into EDIT position while the spooling motors speed up the tape in play direction. Once the tape achieves PLAY speed (information received from the direction/movement sensor), the pinch roller pulls in. This way, minimum wear occurs to the tape. Selecting PLAY during FAST FORWARD will slow down the tape to play speed. Once PLAY speed is obtained, the pinch roller brings the tape in contact with the capstan shaft.

EDIT. Pushing the EDIT button activates the edit control assembly. The audio electronics are muted. Pushing the EDIT button continuously disables the muting circuit. This mode can also be remotely controlled from TAPE LOCK SYSTEM 2000 via the μP .

Fernsteuer-Priorität. Die Umschaltung von Lokal- auf Fernsteuerung (Laufwerk und Audio-elektronik) kann softwaremässig gesperrt werden (für externe Ansteuerung durch TLS oder Studio-BUS).

Wickelmotoren; elektronisch geregelte Scheibenläufer-Motoren mit sehr hohem Drehmoment (bewährte Konstruktion aus der Werkzeugmaschinen-technik).

Wickeln, Aufwickelseite volle Beschleunigung; Abwickelseite bremst oder liefert das Band nach, je nach aktuellem Bandzugwert. Die Umspulgeschwindigkeit ist begrenzt auf 12 m/s (450 ips).

Bremsen, Abwickelseite volle elektrische Bremsung; Aufwickelseite wird in Funktion des aktuellen Bandzugwertes zum Aufwickeln oder auch zum Bremsen bis Bandstillstand gesteuert (Stillstand und Bandrichtungswechsel werden ausgewertet).

Tonmotor; elektronisch geregelter, robuster Wechselstrom-Motor mit 2 induktiven Drehzahlsensoren.

— **Referenz.** Ein vom μP gesteuerter Frequenz-Synthesizer erzeugt von hoher Quarz-referenz (13,1072 MHz) ein feines Raster von Referenzfrequenzen, das nicht nur die normalen Geschwindigkeiten sondern auch variable Geschwindigkeiten im Bereich von ± 7 Halbtönen ermöglicht. Auch die Frequenznachsteuerung im TLS-(Slave)-Betrieb erfolgt mit quartz-ge-nauen Referenzfrequenzen.

Remote control priority. Assignment of priority to local or remote control (transport and audio electronics) can be disabled by means of the software (control with TLS or Studio BUS).

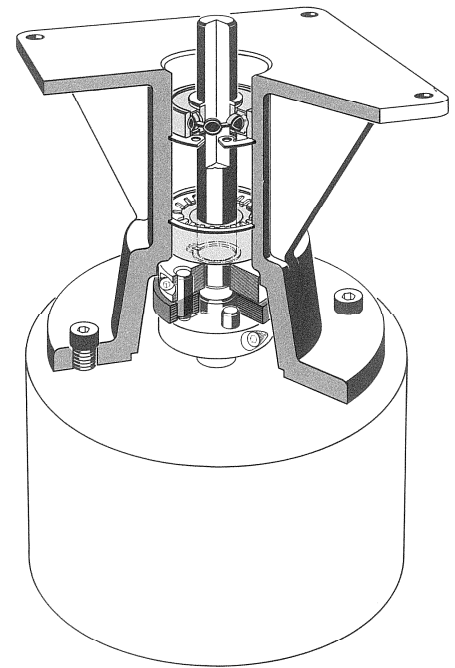
Spooling motors. DC motors with very high torque (reliable design, proven for many years in tooling machinery).

Spooling. Take-up motor full acceleration. Supply motor either supplies tape or provides hold back tension, depending on the actual tape tension. Maximum wind speed is limited at 12 m/s (450 ips).

Braking. Supply motor maximum braking current. Take-up motor current depending on the actual tape tension; therefore, tape tension control during the entire braking cycle.

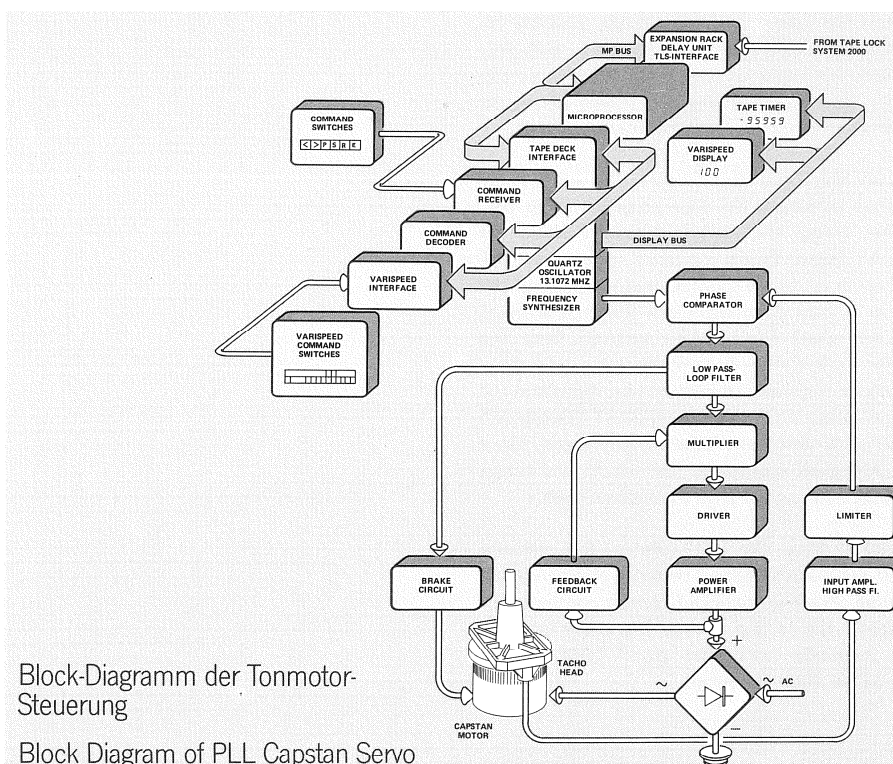
Capstan servo. AC asynchronous motor, servo-controlled with 2 tachos.

— **Reference frequency for PLL capstan servo.** A frequency synthesizer with crystal reference (13.1072 MHz) is controlled by the microprocessor. A fine frequency pattern is available from the synthesizer, permitting the change of reference frequency for the capstan PLL, depending on the information coming from the μP . The nominal speed can be altered within ± 7 halftones. The capstan servo works in a similar way in connection with the TLS 2000.



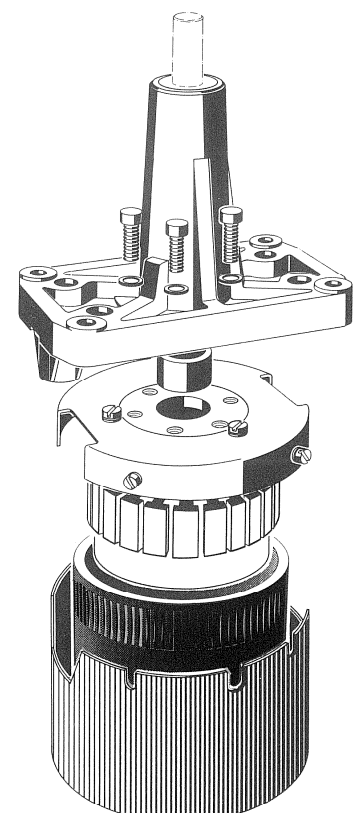
Schnittbild der massiven und hoch-
präzisen Lagerung der Wickelmotorwelle.

Sectional view of the heavy duty and
precise spooling motor shaft bearing
arrangement.



Block-Diagramm der Tonmotor-
Steuerung

Block Diagram of PLL Capstan Servo



STUDER A800 – Audio-Verstärkerelektronik

Die Konzeption der Verstärkerelektronik wird durch den Einsatz eines Mikroprozessors bestimmt. Dadurch ergibt sich auch im Bereich der Audioelektronik eine grosse Flexibilität bei sehr hoher Präzision der Funktionsabläufe.

Die Aufteilung der Audioelektronik in Wiedergabekopf-Vorverstärker und Kanalelektronik unterhalb des Laufwerkes sowie der VU-Meter und Bedienelemente in Sichthöhe bringt nicht nur grosse Vorteile im Arbeitsablauf (handling), diese wirkt sich auch in elektronischer Hinsicht günstig aus.

Wiedergabekopf-Vorverstärker

Durch hochohmige Anpassung – ohne Übertrager – ist eine maximale Übersprechdämpfung sichergestellt.

Die kurzen Verbindungen zwischen Kopfräger und Vorverstärkern garantieren für geringste Brummeinstreuungen, hohen Fremdspannungsabstand und im Zusammenhang mit den Wiedergabeverstärkern auch ein optimales Geräuschspektrum.

Kanalelektronik

Zur Kanalelektronik zählen je vier aktive Printkarten im Europaformat:

- Aufnahmeverstärker
- Wiedergabeverstärker
- Sync-Verstärker (Taktspur)
- HF-Driver

Zwei Kanäle bilden eine Basiseinheit (Basisprint).

STUDER A800 – Audio Electronics

Design and concept of the audio electronics are related to the microprocessor design of the transport electronics. Here too, great flexibility and technical advantages have been achieved in comparison to conventional designs.

The audio electronics are separated in reproduce preamplifiers, channel electronics beneath the tape transport and VU-Meter panel above the tape deck. This leads not only to operational advantages but also to the best possible performance.

Reproduce Preamplifier

High impedance matching of head and preamplifier without step-up transformer, securing maximum crosstalk rejection.

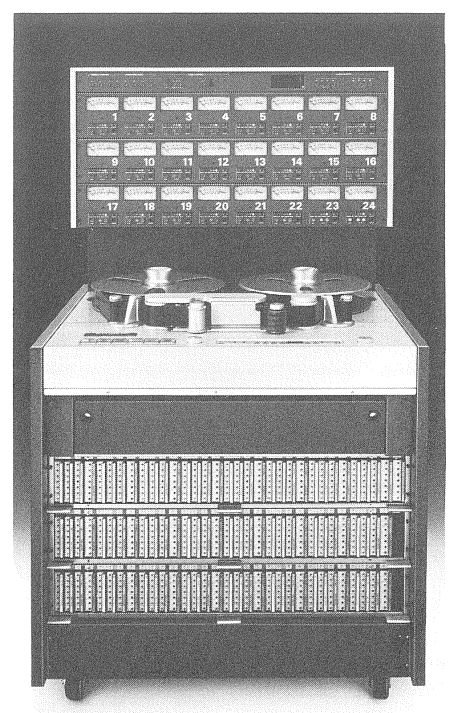
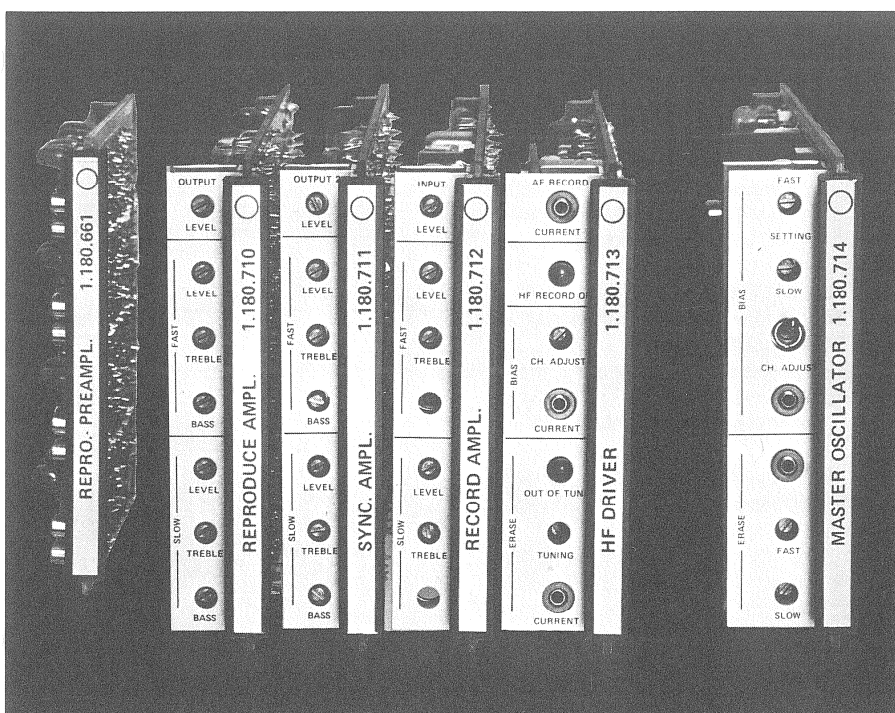
The short connections between head and amplifier reduce the possibility of hum and noise pick-up, resulting in an excellent S/N ratio. The high impedance matching, and the unique design of the preamplifier guarantee a very favourable noise spectrum.

Channel Electronics

Each channel consists of 4 printed circuit boards of European standard size:

- Record amplifier
- Reproduce amplifier
- Sync amplifier
- HF-driver

Two channels resemble one basic module (motherboard).



Die Normumschaltung NAB/CCIR erfolgt elektronisch, zentral gesteuert. Die Entzerrungsnetzwerke sind für 3 Bandgeschwindigkeiten steckbar ausgeführt und ermöglichen, dadurch die Verwendung von identischen Verstärkerkarten für die beiden Geschwindigkeitsvarianten (7,5/15 ips oder 15/30 ips).

In den Aufnahmeverstärkern sind phasenlinear konzipierte Netzwerke zur Höhenanhebung (Treble) enthalten; die Wiedergabe- und Sync-Verstärker weisen Phasenkorrekturschaltungen für den Tiefenbereich auf.

Die Leitungsausgangsverstärker werden von elektronisch geschalteten Sammelschienen angesteuert. Es stehen zwei unabhängige Leitungsausgänge in jedem Kanal zur Verfügung (Ausgang 1 und Ausgang 2). Diese können mit den Signalen "Input", "Sync" oder "Reproduce" belegt werden. Bei Kanälen, die sich in Aufnahme befinden, wird das "Sync"-Signal automatisch durch das "Input"-Signal ersetzt.

Diese Sammelschienenansteuerung via Logik bietet folgende Möglichkeiten:

1.

Gleichzeitige Ansteuerung aller Ausgänge 2 (Audio Master 2) und **gleichzeitige** oder **individuelle** Ansteuerung aller Ausgänge 1.

2.

Automatische Umschaltung "SYNC/INPUT" aller Ausgänge (Funktion Auto Input).

Die "Auto Input" Funktion kann von der Stellung der "Ready" Taste abhängig gemacht werden.

Die Bedienung der Kanäle erfolgt lokal an der Maschine oder an der Fernbedienung. Die Umschaltung erfolgt am Master-Panel im Feld REMOTE CONTROL.

Bei individueller Aufnahme-Vorwahl (Ready) einzelner Kanäle werden diese erst durch Drücken der Laufwerk-Aufnahmetaste (REC) synchron initialisiert (Gruppen-Vorwahl für "Drop-In").

Die Linien Ein- und Ausgänge können wahlweise trafobestückt oder trafolos (elektronisch symmetriert) geliefert werden.

Der HF-Driver jeder Kanaleinheit wird von der Kanal-Logik angesteuert, die ihrerseits Befehle vom μP über die Laufwerksteuerung empfängt. Die Option mit "Delay Unit" verschiebt die "Drop-In"- und "Drop-Out"-Stellen des Löschers und der Aufnahme derart, dass sie übereinanderstimmen (Eliminieren der Kopfdistanzfehler).

Die "Drop-in/Drop-out" Zeiten lassen sich an den verwendeten Kopfträger anpassen. Zusammen mit dem engen Kopfträger lassen sich sehr kurze Reaktionszeiten realisieren.

Spezielle "Drop-In/Drop-Out"-Kreise gewährleisten ein weiches, klickfreies Ein- und Ausschalten der Löscher- und Vormagnetisierungsströme.

Für den schnellen Abgleich der Löschfrequenzauskopplung zeigt eine LED den Resonanzpunkt durch Leuchtminimum an.

Mit einem Abgleichregler pro Kanal wird der Vormagnetisierungskreis inkl. Aufnahmekopf abgeglichen. Die eigentliche Vormagnetisierungseinstellung (Pegel) erfolgt zentral am Masteroszillator für alle Kanäle (separat pro Geschwindigkeit) gleichzeitig.

NAB/CCIR is electronically selected. A master switch selects either CCIR or NAB on all channels. NAB/CCIR time constants are provided for 3 speeds (7.5/15/30 ips), making conversion to both possible speed combinations an easy task.

Treble control in the record amplifiers and bass control in the reproduce amplifiers are phase-corrected for best transient and phase response.

The line amplifiers are controlled via a BUS. 2 outputs (1 and 2) are available providing "INPUT", "SYNC" or "REPRODUCE". Channels in RECORD mode automatically switch from "SYNC" to "INPUT".

The line amplifier BUS is controlled by a logic and offers the following possibilities:

1.

Simultaneous control of all outputs no. 2 (audio master 2) and **simultaneous** or **individual** control of all outputs no. 1 (audio master 1).

2.

Automatic switch-over (from "SYNC" to "INPUT" (auto input).

The "Auto Input" mode can be made dependent on the position of the "Ready" switch (user definable).

The audio channels can be either programmed locally at the machine or via the remote control. Switch-over in Master Panel in section REMOTE CONTROL.

Record preselection can be achieved by pushing the "Ready" button on individual channels. Pushing the "RECORD" button on the transport enables the record mode on the preselected channels (group select).

The line in- and outputs may either be delivered with transformers or transformerless (electronically floating and balanced).

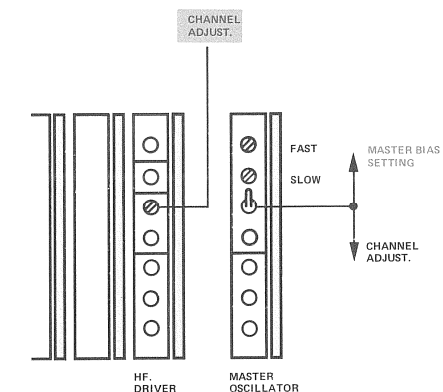
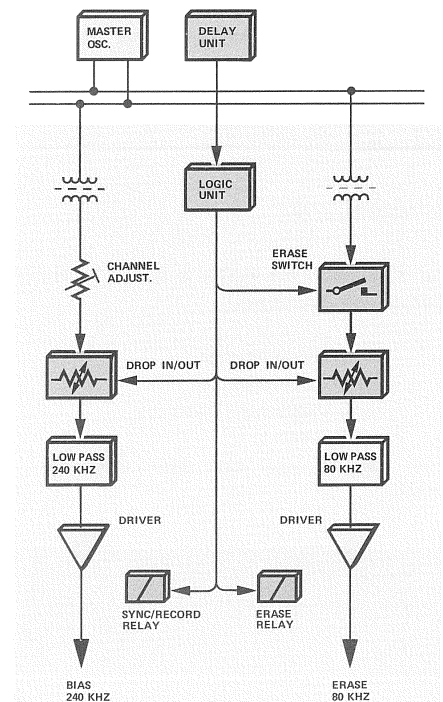
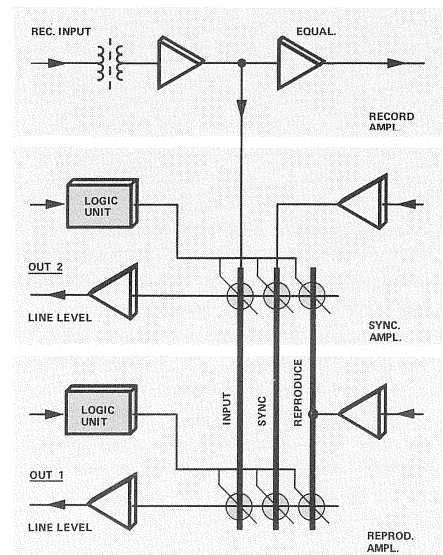
Each HF-driver is controlled via the "channel logic", and the channel logic via the μP . The "Delay Unit" compensates the mechanical distance between erase head and record head, permitting "gap-free" electronic editing.

The "Drop-in/Drop-out" delay can be adapted to the head block assembly used. In combination with the narrow head block very short reaction time can be achieved.

Special care has been taken with the design of the record circuits to guarantee "click-free" drop-in and drop-out of record.

LED indicates resonance of the erase circuit, facilitating fast and easy alignment of the resonance point (resonance = minimum diode current).

Each driver is equipped with a bias control to adjust the operating area of the particular track. The final bias adjustment is done with the 2 master bias controls, separately for both speeds and for all channels simultaneously. Aligning to another brand of tape is therefore an easy task.



Als Funktionskontrolle zeigt eine LED das Arbeiten der HF-Endstufe (Vormagnetisierung) an.
Die Reserven (Headroom) sind sowohl bei den Audiokanälen als auch bei der Vormagnetisierung genügend gross, um auch modernste Bänder mühelos auszusteuern.

Master-Oszillator

Der zentrale Masteroszillator ist quarzgesteuert und liefert die Vormagnetisierungsfrequenz von 240 kHz und die (synchrone) Löschfrequenz von 80 kHz. Das System ist speziell für schnelle Einmessung konzipiert.

Eine übergeordnete Schaltstellung "Channel Adjustment" liefert einen (einstellbaren) Kalibrierpegel für die Vormagnetisierung. Mit diesem Pegel werden die Kanalverstärker **einmal** auf identische Feldstärke des Vormagnetisierungsfeldes justiert.

Die Einstellung der Vormagnetisierung nach Bandtyp erfolgt dann zentral am Masteroszillator für alle Kanäle gemeinsam und für beide Geschwindigkeiten getrennt.

Der Pegel der Löschfrequenz ist zentral für beide Geschwindigkeiten separat regelbar (optimale Löschdämpfung ohne Überlöschen in den Nachbarkanälen).

Another LED indicates the proper functioning of the bias circuit. Audio electronics and HF-drivers are designed to give plenty of head room to handle any tape on the market.

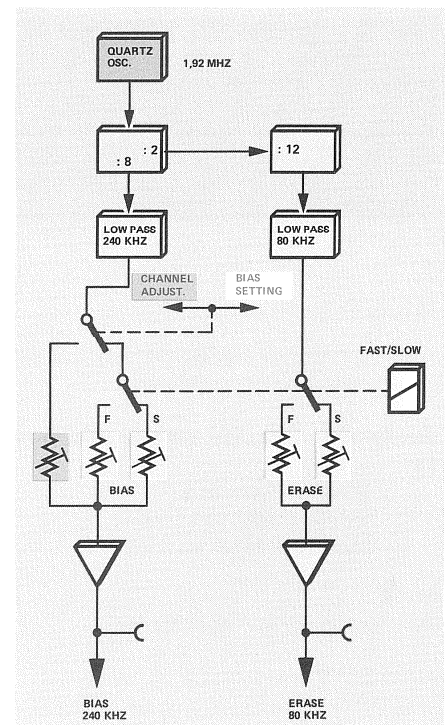
Master Oscillator

The master oscillator is crystal controlled, delivering 240 kHz (bias) and 80 kHz (erase). It is designed for easy alignment of Erase and Bias circuits.

A switch "Channel Adjustment" provides a calibrated bias signal (adjustable). In this switch position, **all** bias controls on the HF-drivers are aligned for optimum bias setting.

In position "Bias Setting", the bias can be aligned for all channels simultaneously. There are 2 separate controls, one each for both speeds.

The 80 kHz level can be adjusted separately for both speeds, keeping neighbour track erasure at a controllable level.



VU-Meter-Panel

Durch die Anordnung der Kanalverstärkereinheiten unterhalb des Laufwerkes konnten die VU-Meter- und Steuereinheiten in Sichthöhe grosszügig und sehr übersichtlich gestaltet werden.

Grossflächige VU-Meter (nach IEC Publikation 268, Part 10) mit zentral umschaltbarer Beleuchtungsstärke.

Die VU-Meter sind auf der symmetrischen Ausgangsseite angeschlossen, wobei die 0 VU-Anzeige an Leitungspegel von 0 / +4 / +6 / +8 dBm durch Umstecken anpassbar ist.

Die Bedienelemente pro Kanal umfassen die SAFE/READY-Umschaltung (mit Rückmeldung durch LED's: Ready – grün, Record – rot) und die INPUT/REPRODUCE/SYNC-Umschaltung (Ausgang 1) mit Funktionsanzeigen mittels LED's. Die VU-Meter und der Jack-Ausgang lassen sich auf die Ausgänge 1 oder 2 umschalten.

Die NF-Ein- und Ausgänge führen parallel auf Multipolanschlüsse und auf XLR-Buchsen (3-pol).

VU-Meter Panel

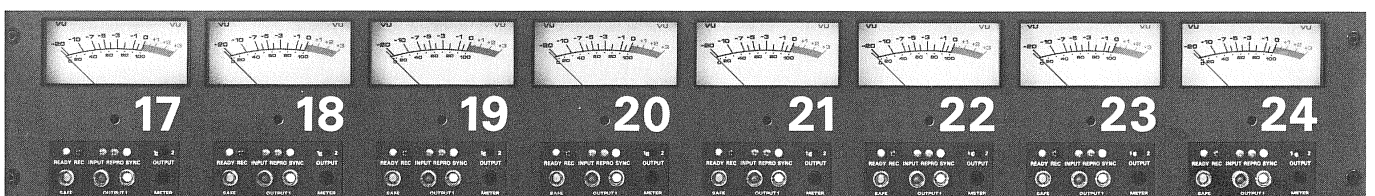
Since the audio electronics are located beneath the transport, plenty of space had been made available above the deck for large VU-meters and a clear arrangement of all controls.

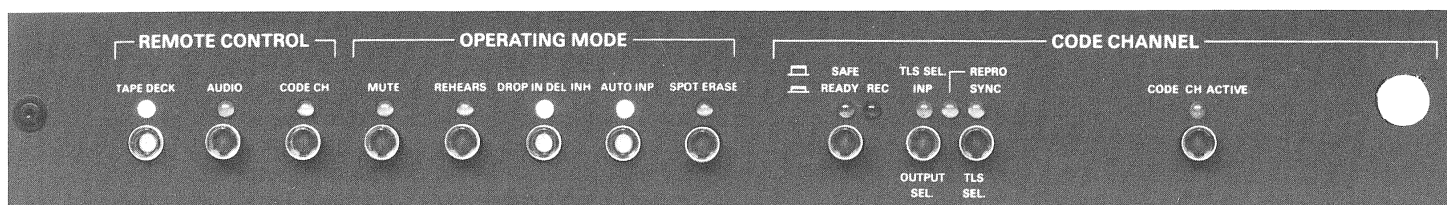
The large VU-meters correspond to the standards as outlined in the IEC publication 268, paragraph 10. The meter illumination is switchable in two steps: dim or bright.

The VU-meters are connected to the balanced output of the machine. 0 VU reference is selectable with a program jumper (0 / +4 / +6 / +8 dBm).

The operating controls for each channel are separately provided. SAFE/READY with LED status indication: Ready – green, Record – red. INPUT/REPRODUCE/SYNC (output 1 only) with LED status indication. For headphone monitoring, a jack is installed. The VU-meters and headphone jacks can be connected either to output 1 or 2 (switchable).

Audio in- and outputs are wired in parallel to multipin and XLR connectors.





Master-Panel

Im übergeordneten Masterpanel sind folgende Steuerelemente zusammengefasst:

Umschaltung für Lokal- oder Fernbedienung von:

- Laufwerk (Tape Deck)
- Verstärkerelektronik (Audio)
- Code-Kanal (Tape Lock System)

MUTE

Stummschaltung der Audiokanäle.

AUTO MUTE (anstelle von Mute, wählbar)

Automatische Stummschaltung der Audiokanäle im Wickelbetrieb (ausser Zeitcode-Kanal)

REHEARSAL

Simulation des Insert-Betriebes. Ersetzen des Sync-Signals durch das Input-Signal; die Löscho- und Aufnahmeströme werden jedoch nicht eingeschaltet. Die Umschaltung Sync/Input erfolgt zeitrichtig.

DROP IN / DEL. INH(ibit)

Synchrones Einsteigen der Aufnahmekanäle ohne Verzögerung; schneidgerechtes Aussteigen (Handbetrieb mit Markierung).

AUTO INPUT (2 mögliche Betriebsarten, wählbar)

Automatisches Umschalten aller Kanalausgänge in Betriebsart "Sync" auf Eingangssignal während Bandstillstand und Wickelbetrieb.

Automatisches Umschalten aller Kanalausgänge in Betriebsart "Sync/Ready" auf Eingangssignal während Bandstillstand und Wickelbetrieb.

SPOT ERASE

Zum Löschen kurzer Bandstellen von Hand (Löschkopf aktiviert, Edit-Funktion, Motoren abgeschaltet).

Versenkte Steuerelemente (gesichert hinter Kunststoffschieber) für:

SAFE

Aufnahmefunktion gesperrt (nur Wiedergabe).

NAB/CCIR

Normumschaltung für alle Kanäle gleichzeitig.

OUT. CALIBR(ation)

Zum Umschalten aller Leitungsverstärker (Ausgänge 1 + 2) auf definierte Verstärkung (Einstellen der Signalpegel auf den Sammelschienen).

OUT. + 10 dB

Zum Umschalten aller Leitungsverstärker (Ausgänge 1 + 2) auf 10 dB erhöhte Verstärkung für die Frequenzgangmessung (Repro- und Sync-Signale).

Master Panel

The master panel is located above the VU-meter panel, featuring the following controls:

Selector for local or remote control of:

- Transport
- Audio electronics
- Code channel (TLS 2000)

MUTE

Muting of the playback electronics.

AUTO MUTE (instead of Mute as above, selectable)

Automatic muting of the playback electronics when in wind mode (except time code channel).

REHEARSAL

Simulation of an electronic edit. Instead of executing the actual edit, the sync-playback electronics are either muted or switched to input. The muting or input switching is timed exactly as the actual recording or insert would be.

DROP IN / DEL. INH(ibit)

Drop in delay inhibit. The timed switching of erase and record head is disabled when dropping in, but still in effect when dropping out of record (manual electronic editing with marker on tape deck).

AUTO INPUT (2 modes, selectable)

Automatic switch over of all Sync channels to input when machine is in stop or in wind mode. Automatic switch over of all "Sync/Ready" channels to input when machine is in stop or in wind mode.

SPOT ERASE

Manual erasure of short sections of tape. (Erase head energized, edit mode, motors disabled.)

Retracted controls (secured behind plastic slide) for:

SAFE

Master safe (playback only).

NAB/CCIR

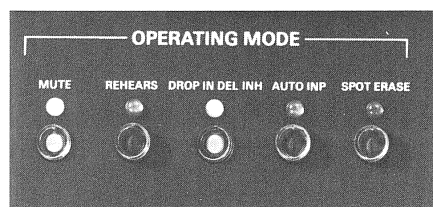
Master NAB/CCIR selector.

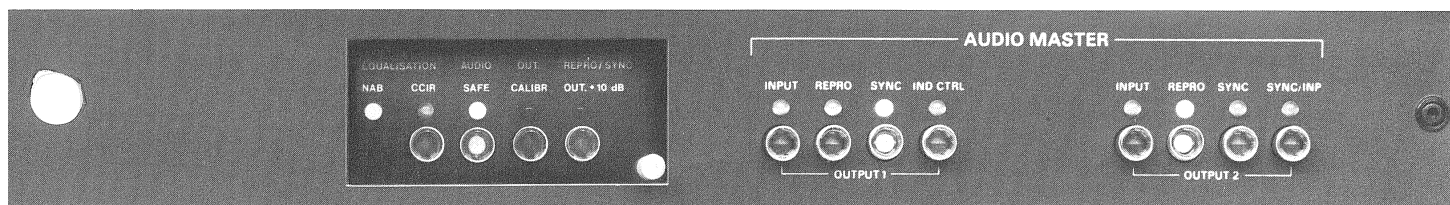
OUT. CALIBR(ation)

Calibrates gain of all line amplifiers (output 1 + 2), to align the level of the signal bus.

OUT. + 10 dB

Increases the gain of all line amplifiers (output 1 + 2) by 10 dB for frequency response alignments with the VU-meter on the machine.





Audio-Master-Feld

Übergeordnete Steuerelemente für die Verstärker-Kanaleinheiten. Bei Bedienung dieser Tasten werden die individuell eingestellten Kanalelemente wirkungslos (resp. wirksam bei IND. CTRL.).

OUTPUT 1 (Ausgänge 1), Drucktasten:

INPUT

Alle Ausgänge 1 schalten auf Eingangssignal.

REPRO(duce)

Alle Ausgänge 1 schalten auf Wiedergabesignal.

SYNC

Alle Ausgänge 1 schalten auf Sync-Signal. Bei Aufnahme Input-Signal an den Ausgängen (mit Stecker umprogrammierbar auf kein Signal bei Aufnahme).

IND CTRL (individual control)

Umschaltung auf individuelle Steuerung an den Kanaleinheiten.

OUTPUT 2 (Ausgänge 2)

Master-Tasten mit gleicher Wirkung und Funktionsanzeigen mit LED wie bei den Ausgängen 1 für INPUT, REPRO und SYNC/—.

Anstelle der Taste IND. CTRL besitzt der Master-Ausgang 2 eine Taste:

SYNC/INPUT

für fest programmierte, automatische Umschaltung aller Ausgänge 2 von Sync-Signal auf Eingangssignal bei Aufnahmestart.

Audio Masters

Master controls for the audio electronics. These controls override the individual controls of each channel. Master control: IND. CTRL. assigns priority to the individual channels.

OUTPUT 1 (Push-buttons):

INPUT

All outputs no 1 provide INPUT.

REPRO(duce)

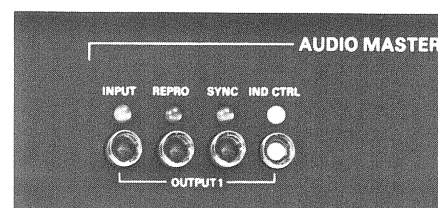
All outputs no 1 provide REPRODUCE.

SYNC

All outputs no 1 provide SYNC. In record, either input or muting is provided (programmable with jumper).

IND CTRL (individual control)

Individual channel mode control.

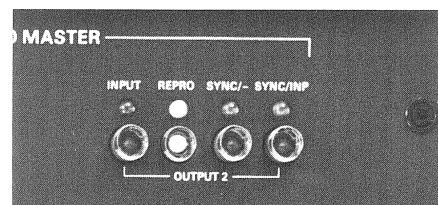


OUTPUT 2

Same master controls as for output 1, however, IND. CTRL is replaced by:

SYNC/INPUT

All outputs no 2 provide SYNC. In record automatic switch-over to input.



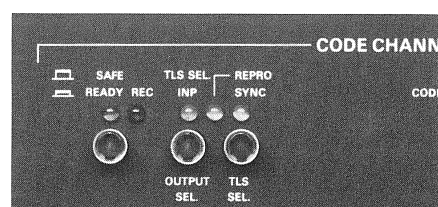
Code-Channel

Mit der Option "Code Channel/TLS Interface" lässt sich die A800 für das Synchronisiersystem TLS 2000 vorbereiten. Die zusätzlichen CODE CHANNEL-Bedienungselemente umfassen die Taste für das Umschalten der Kopfsysteme (letzte Spur) von der Audio- zur Code-Elektronik und die Code-Kanal-Steuertasten.

Alle Steuerungen werden mit LED's signalisiert; eine weitere LED zeigt an, ob Code-Signal vorhanden ist.

Code Channel

With the option "Code Channel/TLS Interface" the A800 is prepared to operate with the TAPE LOCK SYSTEM 2000. The switch-over of the code track (bottom edge track) from the audio electronics to the TLS electronics is achieved by the switch CODE CH ACTIVE. Additional push-buttons control the mode of the code channel electronics. All modes are indicated with LEDs. One additional LED indicates whether there is code or not.



Elektronisches Schneiden

Die Verzögerungseinheit (Delay Unit) ermöglicht es, mit der A800 auf allen Kanälen nahtlos (Überlappungszeit max. 10 ms), elektronisch einzusteigen, resp. elektronisch zu schneiden. Durch elektronisch gesteuerte Verzögerungen der Lös- und Vormagnetisierungsströme in Abhängigkeit der Bandgeschwindigkeit — softwaremässig sogar bei variablen Geschwindigkei-

Electronic Editing

The "Delay Unit" facilitates perfect drop in/drop out performance of the A800 (overlap 10 ms max.). Perfect inserts and assemblies are possible together with the TLS 2000. Switching of erase and record head is controlled by the delay unit. The timing is correct for both speeds, and is even corrected for the variable speed mode with the appropriate software. The

ten realisiert — wird das sonst unvermeidbare Modulationsloch (oder Überlappung) zwischen zwei Aufnahmen (Takes) verhindert.

Handgesteuertes Schneiden

Beim bereits erwähnten, handgesteuerten Schneiden erfolgt der Einstieg (drop in delay inhibit) auf Tastendruck verzögerungsfrei, der Ausstieg hingegen mit Verzögerung. Damit ist sichergestellt, dass ein erneuter Einstieg an derselben Stelle nahtlos erfolgen kann. Durch Beendigung der Aufnahme mit der "Stop" anstelle der "Play" Taste kann die Ausstiegsverzögerung unterdrückt werden.

A800 with the delay unit is an ideal instrument for perfect electronic editing.

Manual Editing

Manual editing is possible with the "drop in delay inhibit" mode discussed earlier. Pushing the record button will bring the machine into record with no delay; disabling the record mode will turn off record and erase head sequentially. Manual assembling will be obtained this way. By ending a recording by the "Stop" rather than the "Play" key the drop out delay can be inhibited.

Elektronisch programmiertes Schneiden

Da die "Delay Unit" jeden Kanal einzeln ansteuern kann, ist mit dem STUDER Synchronisier System auch programmiertes Schneiden realisierbar. Der elektronische Schnitt kann in Funktion REHEARSAL vollkommen simuliert werden. Dabei ist es möglich, die Schnittstellen in ms-Schritten zu variieren, und zwar solange, bis der Schnitt an der richtigen Stelle erfolgt. Sind einmal die Ein- und Ausstiegspunkte festgelegt, ist der anschließende "heisse" Schnitt nur noch eine Frage des üblichen Synchronizer-Startes, also völlig problemlos.

Automated electronic editing

The A800 together with the STUDER synchronizing system offers fully automated and perfect electronic editing. Due to the very high resolution of the synchronizer, editing decisions can be defined down to an accuracy of 1 ms. With the "Rehearse" feature (like in video editing technique), edits can first be practised and — if necessary — be corrected later. After having perfected the simulation of the edit, the overdubbing takes place.



Audio-Fernsteuerungen, 8-, 16- und 24-Kanal-Maschinen

An den Fernsteuerungen sind sämtliche Möglichkeiten der Kanal- und der Audio-Master-Steuerung vorhanden (ausser der individuellen Wahl des Repro-Signals für Ausgang 1). Die LED-Anzeigen sind identisch mit denjenigen der Maschine (inkl. aktive Rückmeldung bei READY/REC).

Audio remote control for the 8, 16 and 24 track machines

All control possibilities for each individual channel can also be found on the audio remote control (with the exception of individual control of "Reproduce"). Two rows of master push-buttons (like the ones on the machine) define the signal appearing on output 1 and output 2.

LED indicators (identical to the ones at the machine) show the status of each channel.

Autolocator

Der neue Autolocator mit 20 frei verfügbaren Zählerstandadressen ist speziell für die STUDER A800 entwickelt worden.

Zusammen mit der Mikroprozessor-Steuerung des Laufwerkes bietet er umfangreiche, spezielle Bedienungsmöglichkeiten, die ihn zu einem sehr nützlichen Instrument zur Rationalisierung der Arbeitsabläufe machen.

Ist die Maschine mit Autolocator ausgerüstet, bleiben beim Ausschalten Zählerstand und Varispeed gespeichert.

Autolocator

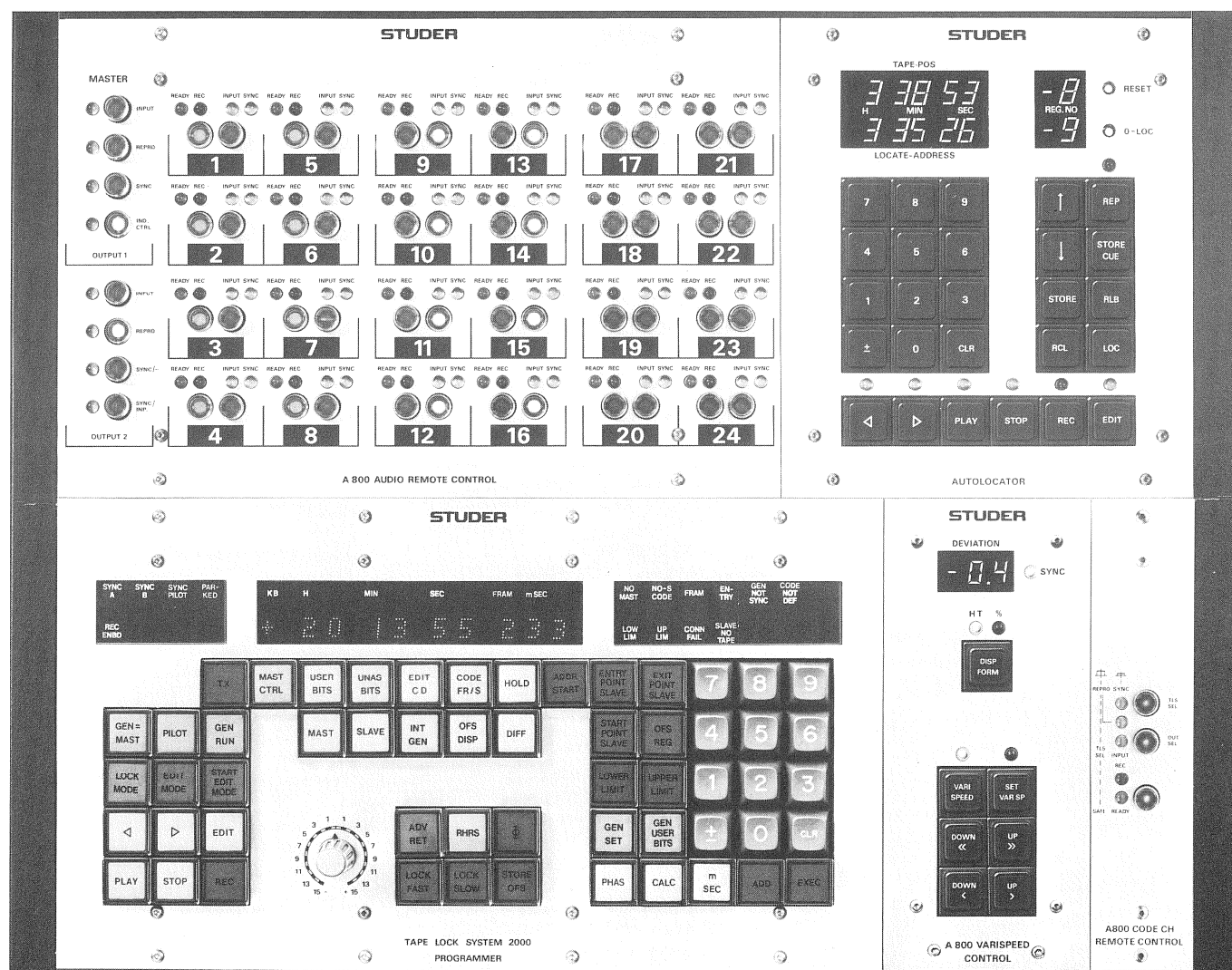
The autolocator developed for the STUDER A800 again offers an extremely wide range of operational possibilities due to the microprocessor-based transport electronics.

In addition to its 20 memories, it has many special features making it a very useful time and manpower-saving instrument.

On machines equipped with autolocator the position of the tape counter and the varispeed remain stored when switched of.

Beispiel für Steuerungs-Zubehör

Illustration of accessories



STUDER A800

Ordering Information

Model

A800—8—1"

(60.180.11803)

Professional Master Tape Recorder

8-track, 1" tape

standard features:

- electronic tape timer
- zero locator
- address locator
- variable speed control
- delay unit for timed bias and erase switching
- rehearse feature
- 3 way remote connector
- transformerless electronically balanced inputs and outputs

Audio in- and outputs via

- AMP type HD multipin connectors (mating connectors supplied with machine)
- XLR-connectors (mating connectors not supplied)

Speed:

7.5/15 or 15/30 ips (please specify)

Note:

A800—8 track machine can not be upgraded to 16 or 24 channels

Machine may also be ordered with transformer isolated inputs and outputs.

A800—16—2"

(60.180.11807)

as above, but 16-track, 2" tape

Machine is completely prepared for upgrading to 24 channels

A800—24—2"

(60.180.11810)

as above, but 24-track, 2" tape

Options

Code Channel/TLS Interface

(1.180.086.00)

SMPTE code channel electronics complete with interface for slave operation or master control in conjunction with STUDER synchronizing and editing systems, consisting of:

- SMPTE code record and read amplifiers
- Code channel control panel
- Synchronizer interface for slave operation
- Synchronizer interface for master operation

When SMPTE time code has to be recorded and played back on bottom edge track for system control in automated mixing consoles, this option is ideally suited.

Accessories

TLS 2000—800

Trolley version (69.900.30100)

Complete system installed in roll-around cabinet (trolley-type), with 15m connection cable from tape machine to trolley

Rack version (69.900.30101)

Complete system for installation in 19" rack, with 15m connection cable from tape machine to synchronizer and 15m connection cable from synchronizer to programmer

Master control interfaces are available for a variety of video tape machines, please inquire.

Autolocator A800

(20.020.100.03)

With 20 memories, loop operation, roll back, store cue and many other functions, consisting of:

- Control unit (1.328.130.00)
- 15 m connecting cable (1.328.150.00)
- Locator interface card (1.180.475.00)

Audio remote control for 8 channels

(20.020.101.09)

consisting of:

- Control unit (1.328.100.00)
- 15 m connection cable (1.328.152.00)

Audio remote control for 16 channels

(20.020.101.07)

consisting of:

- Control unit (1.328.101.00)
- 15 m connection cable (1.328.152.00)

Audio remote control for 24 channels

(20.020.101.08)

consisting of:

- Control unit (1.328.102.00)
- 15 m connection cable (1.328.152.00)

Code channel remote control

(20.020.101.10)

consisting of:

- Control unit (1.328.140.00)
- 15 m connection cable (1.328.151.00)

only in connection with the option code channel/TLS interface (1.180.084.00)

Vari-speed remote control

(20.020.102.03)

consisting of:

- Control unit (1.328.120.00)
 - 80 cm connection cable (1.328.153.00)
- only in connection with the Autolocator

Mounting Accessories for remote controls

Note:

All new STUDER remote controls are designed in a modular way. The smallest remote control package consists of one STUDER standard module with exactly defined front panel measurements. The front panel width of a larger remote control package is a multiple of the front panel width of one standard module. The front panel height, however, remains constant. The front panel sizes of remote controls are defined by the number of modules.

Front panel size of standard module:

H = 190 mm x W = 40.6 mm.

Size of STUDER remote controls:

TLS 2000 programmer: 8 modules

8 channel remote:	3 modules
16 channel remote:	5 modules
24 channel remote:	7 modules
Autolocator:	4 modules
Code channel remote:	1 module
Vari-speed remote:	2 modules

Stand, small version with single mounting frame fitting 11 STUDER standard modules (1.328.080.00)

Stand, large version with double mounting frame fitting 2 x 11 STUDER standard modules (1.328.090.00)

Table cabinet, fitting 6 STUDER standard modules (1.328.095.00)

19" mounting frame, fitting 11 STUDER standard modules (1.918.400.00)

Filler panels for STUDER mounting accessories

1 module (1.038.341.00)

2 modules (1.038.342.00)

3 modules (1.038.343.00)

Headassemblies

8-track 1.020.795.00

16-track 1.020.796.00

24-track 1.020.797.00

Service cases for A800

Tool kit A800, compl. with soldering iron 220V (20.020.001.05)

Tool kit A800, compl. with soldering iron 110V (20.020.001.55)

Tool kit A80/A800 combined, compl. with solderin iron 220V (20.020.001.09)

Tool kit A80/A800 combined, compl. with solderin iron 110V (20.020.001.59)

Precision gauges

- Reference gauge (10.010.001.01)
- Precision gauge 1" (10.010.001.04)
- Precision gauge 2" (10.010.001.05)
- Tape tension sensor cover engraved (set of 2) (10.010.002.07)
- Gauge for pinch roller assembly (10.010.002.06)

Mating connectors

78 pole HD 22 male connector (20.540.211.10) for:

- audio remote control connector
- transport remote control connector

50 pole HD 20 female connector (20.020.303.04) for:

- audio inputs/outputs connector
 - 15 pole HD 20 male connector (20.202.303.03) for:
 - noise reduction control connector
- (This connector is included in standard machine accessory)

XLR-connector male (54.02.0280)

XLR-connector female (54.02.0281)

General remarks:

- Each machine is supplied in a metal console with castors (operational height: 90 cm).
- The equalization CCIR/NAB is switchable.
- Machines are suitable for both 50 and 60 Hz mains power (specify when ordering).
- Speed 7.5/15 or 15/30 ips (please specify).
- Prices to be understood ex works, without packing.

STUDER A800

Technical Specifications

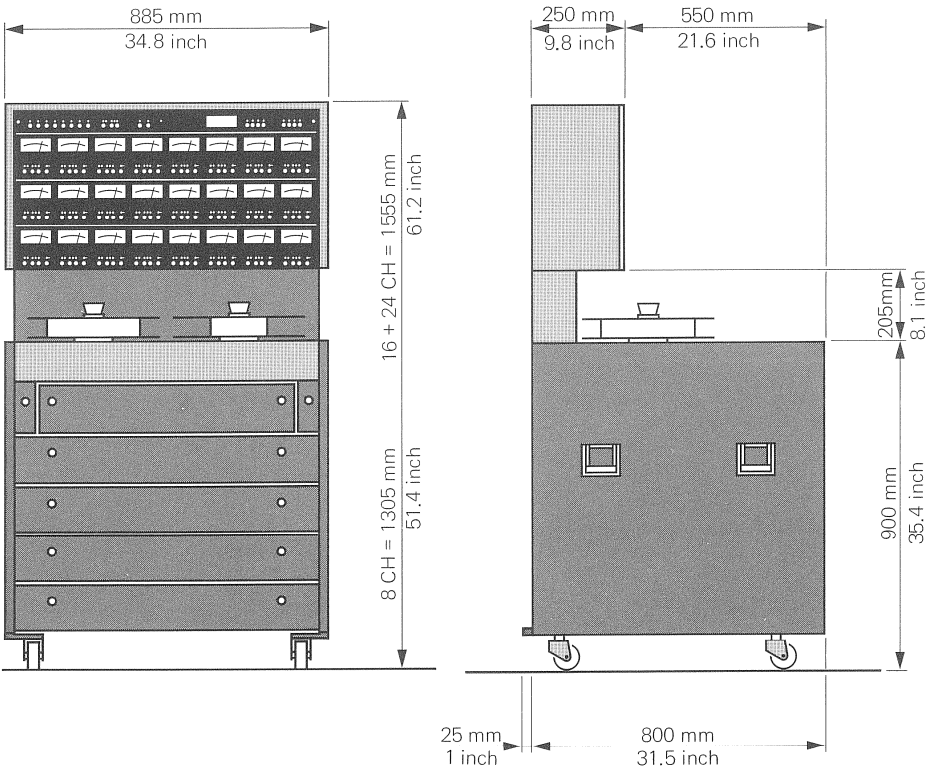
Tape speeds:	crystal controlled 7.5 ips and 15 ips $\pm 0.2\%$ or 15 ips and 30 ips $\pm 0.2\%$		
Reel type:	up to 14", NAB hub		
Tape slip:	0.1 % max.		
Wow and flutter: ■ measured with EMT 420, DIN 45 507, peak value, weighted:	7.5 ips 0.06 % max.	15 ips 0.04 % max.	30 ips 0.04 % max.
Tape timer:	$\pm 0.2\%$ accuracy Indicating hours, minutes and seconds. Real time indication for 7.5/15 ips or 15/30 ips.		
Rewind time:	approx. 100 sec for 730 m reel (2400 ft)		
Line inputs: Minimum input level: Maximum input level:	balanced and floating; input impedance 8 kohms minimum, 30 Hz...20 kHz – 1 dBm to produce recommended operating level* + 24 dBm		
Line output 1: Max. undistorted output level:	balanced and floating; output impedance 30 ohms max., 30 Hz...20 kHz (minimum load impedance 200 ohms) + 24 dBm into 600 ohms		
Line output 2:	same specifications as line output 1		
Equalization: (switchable with master selector) NAB: CCIR:	7.5 ips 50/3180 μ s 70 μ s	15 ips 50/3180 μ s 35 μ s	30 ips 17.5 μ s 17.5 μ s
Frequency response: (via tape)	7.5 ips 30 Hz ... 15 kHz ± 2 dB 60 Hz ... 12 kHz ± 1 dB	15 ips 30 Hz ... 20 kHz ± 2 dB 60 Hz ... 18 kHz ± 1 dB	30 ips 50 Hz ... 20 kHz ± 2 dB 60 Hz ... 20 kHz ± 1 dB
Sync frequency response: jumper selectable "narrow or wide" narrow wide▲	7.5 ips 30 Hz ... 8 kHz ± 2 dB 30 Hz ... 10 kHz ± 2 dB	15 ips 30 Hz ... 12 kHz ± 2 dB 30 Hz ... 18 kHz ± 2 dB	30 ips 50 Hz ... 12 kHz ± 2 dB 50 Hz ... 20 kHz ± 2 dB
Signal to noise ratio: ■ referred to 6 dB above operating level* (unweighted noise in accordance with NAB standard)	8/16 channel		
	7.5 ips	15 ips	30 ips
RECORD-REPR:	70 dB	70 dB	74 dB
RECORD-SYNC:	68 dB	68 dB	68 dB
	24 channel		
	7.5 ips	15 ips	30 ips
RECORD-REPR:	66 dB	66 dB	70 dB
RECORD-SYNC:	62 dB	62 dB	62 dB
Distortion: ■ at 1 kHz (3rd harmonic) NAB equalization at operating level:*	7.5 ips 1 % max.	15 ips 1 % max.	30 ips 1 % max.

Crosstalk rejection:	
between adjacent tracks at 15 ips (Jumper narrow)	
Reproduce mode:	8/16 channel 40 dB min. 80 Hz ... 12 kHz
Sync mode:	20 dB min. at 1 kHz 10 dB min. at 10 kHz
Reproduce mode:	24 channel 40 dB min. 100 Hz ... 12 kHz
Sync mode:	18 dB min. at 1 kHz 4 dB min. at 10 kHz
Erase efficiency:	75 dB min. at 1 kHz
Erase frequency:	80 kHz
Bias frequency:	240 kHz
Power requirements:	
Mains:	100V, 120V, 140V or 200V, 220V, 240V $\pm$ 10 %, 50 or 60 Hz
Power consumption (tape transport and amplifiers):	1100 VA
Environmental operating temperature:	+ 10 ⁰ to + 40 ⁰ C (50 to 104 ⁰ F) (if good air circulation is provided)
Environmental operating humidity:	20 ... 95 %, non condensing
Safety standard:	Mains input according to IEC- Standard, Publication 65, Apparatus Class I
Mass:	A800 - 8 249 kg (548 lbs) A800 -16 313 kg (689 lbs) A800 -24 343 kg (755 lbs)

- measured with 3M 250 or equivalent
- * operating level (510 nWb/m tape flux)
- ▲ sync crosstalk specifications not guaranteed

We reserve the right to make alterations
as technical progress may warrant.

Dimensions



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2. TRANSPORT, INSTALLATION UND BEDIENUNG

2.1 TRANSPORT

2.1.1 Hinweise

Tonbandmaschinen sind Präzisionsinstrumente, die auch beim Transport und beim Verschieben an ihren Einsatzort als solche behandelt werden müssen. Schädliche Einwirkungen wie zu grosse Temperaturschwankungen, Feuchtigkeit, Vibrationen oder gar schockartige Schläge durch Fallenlassen, Umkippen und Kollisionen sind zu vermeiden.

VERPACKUNG

Viele Schäden können schon durch eine geeignete Verpackung vermieden werden. Dazu stehen Luft- und Seefrachtverpackungen zur Verfügung.

Die A800-Serie wird demontiert geliefert. Die Konsole mit dem kompletten Laufwerk und der Steuerung wird dazu auf einem Holzrahmen mit aufgesetzter Sperrholzbox befestigt. In einer weiteren Box ist der VU-Meteraufbau verpackt.

Wo nötig, macht eine robuste Holzverschalung die Verpackungen seefracht-tüchtig.

TRANSPORT

Je nach Gerät und gewählter Verpackung ist die entsprechende Transportkapazität bereitzustellen.

Das Umladen der verpackten Laufwerke erfolgt am besten durch Gabelstapler oder genügend lange Hebebänder, immer in der (markierten) senkrechten Lage.

INSPEKTION

Sollte die Verpackung bei Empfang der Ware Transportschäden aufweisen, ist so rasch wie möglich eine Tatbestandsaufnahme nach den jeweiligen Transportvorschriften zu veranlassen. Die Verpackung ist unverändert zu belassen; als Beweis für die Versicherung empfiehlt es sich sogar, den Zustand durch Fotos festzuhalten.

2. SHIPPING, INSTALLATION AND OPERATING INSTRUCTIONS

2.1 SHIPPING

2.1.1 Notes

Tape machines are precision instruments which should be treated as such during transportation or relocation to the place of operation. Detrimental influences such as extreme temperature changes, humidity, vibrations or even severe shocks caused by dropping, tipping, or collision, should be avoided.

PACKING

Proper packing of the machine considerably reduces the risk of damage. Packing material is available for shipping the machine by air or sea freight.

The machines of the series A800 are disassembled at the plant prior to shipment. The console with the complete tape deck and control is mounted on a wooden frame which is subsequently enclosed with a wooden box. The VU-meter assembly is packed separately.

Machines which are to be shipped by sea freight are suitably crated.

TRANSPORTATION

Transportation arrangements need to be made which are adequate for the type of machine and packing.

For unloading of the packed tape decks a forklift or lifting belts of sufficient length should be used. Keep the machine in its upright (marked) position.

INSPECTION

If upon arrival there is evidence of damage in transit, the particulars must be immediately recorded in conformity with the applicable transport regulations. If damaged, the packages should be left in their arrival condition. In addition it is advisable to take some pictures to backup the insurance claim.

2.1.2Auspacken

Ist das Laufwerk einmal ausgepackt oder das ganze Gerät schon montiert, sollten keine grösseren Touren auf den eigenen Rädern unternommen werden. Dazu eignet sich ein Gabelstapler mit genügender Tragkraft (Vorsicht: Kippgefahr). Dabei ist der Stapler immer von der Geräterückseite her anzusetzen.

Die Handgriffe sind für kleinere Verschiebungen ganz nützlich, als Hlepunkte für Krane sind sie jedoch entschieden abzulehnen.

Bitte bedenken: Teile der Verpackung können bei einem späteren Transport wieder wertvolle Dienste leisten, bewahren Sie sie daher auf wenn möglich.

2.1.2Unpacking

Once the tape deck has been unpacked or after the machine has been completely assembled, it should not have to travel on its casters over any great distances. For this purpose, a forklift of sufficient capacity should be used (Caution: danger of tilting!). The forklift must approach the machine from its rear.

Under no circumstance may the machine handles be used for attaching crane hooks.

Please remember, that some of the packing material may be useful for subsequent reshipping of the machine. It should therefore be retained if possible.

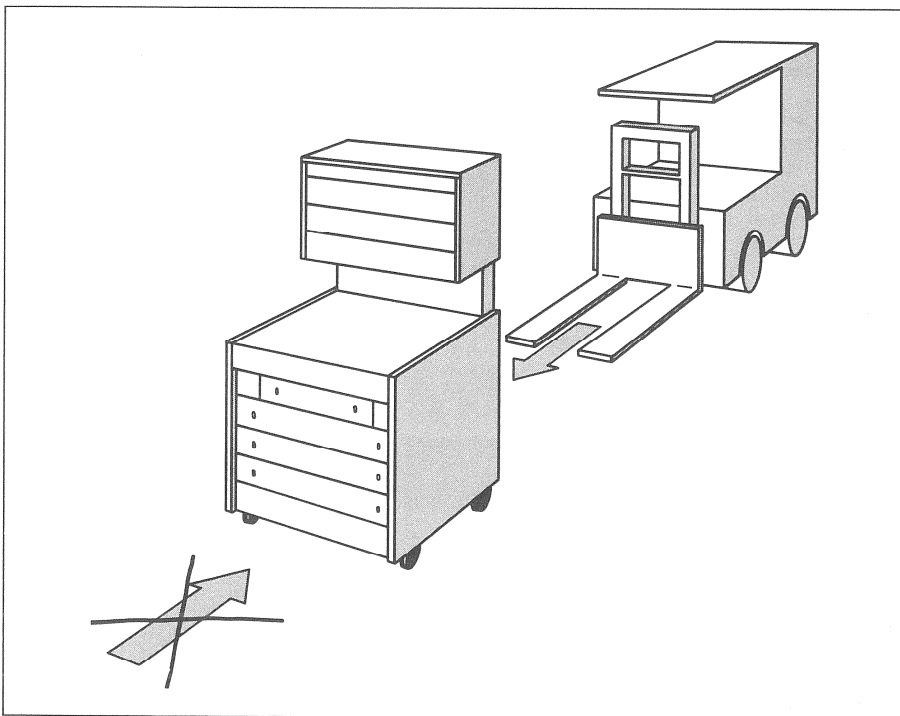


Fig. 2.1

2.2INSTALLATION

Die Wahl des geeigneten Aufstellplatzes geschieht häufig unter erheblichen Sachzwängen. Um die Arbeitsbedingungen der Tonbandmaschine nicht einzuengen, sind folgende Punkte zu beachten:

- Trockener Raum mit etwa gleichbleibender Temperatur, damit kein Kondenswasser entstehen kann.

2.2INSTALLATION

The choice of a suitable installation site is frequently narrowed down by the prevailing circumstances. However, for a proper operating environment at the tape machine, the following points should be observed:

- Dry room, limited temperature fluctuation in order to prevent condensation.

- Die Luftzirkulationszone soll genügend Zu- und Abluftumwälzung ermöglichen. Zone auch im Einsatz nicht als Ablagefläche benutzen oder Abluft- und Ventilationsöffnungen mit Handbüchern o.ä. zudecken.
- Geräte nicht der direkten Sonnenbestrahlung aussetzen. Effekt- und Arbeitsbeleuchtung sowie Heizkörper sollen keine Geräteteile aufheizen können.
- Beim Aufstellen der Maschine in einer Nische besteht erhöhte Gefahr von Wärmestaus. Beachten, dass die Rückseite der Maschine für Servicezwecke voll zugänglich bleibt, oder auch mit angeschlossenen Kabeln genügend Spielraum zum Verschieben des Gerätes übrig bleibt.
- Auf ausreichende Qualität des Versorgungsnetzes achten (Spannungskonstanz, Frequenzstabilität, Querschnitt der Zuleitungen, Störeinstrahlungen).
- Gerät keinen magnetischen Störfeldern aussetzen (Hauptzuleitungen, Transformatoren, Motoren etc.).
- Allow for sufficient ventilation in the air circulation zone, i.e. this zone is not to be used as storage area and the air inlets and exhaust louvres should not be covered with manuals etc.
- Do not expose machine to direct sunlight. Special effect lighting, illumination of the operating area or heaters should not warm up any part of the equipment.
- If the machine is installed in a recess, there is increased danger of heat accumulation. Please make sure that the rear of the machine is fully accessible for service work or that there is sufficient clearance for pulling the machine out of the recess with connected cables.
- Adequate quality of the supply network (voltage fluctuation, frequency, irradiation of parasitic noise).
- Do not expose machine to fields of magnetic interference (mains, transformers, motors etc.).

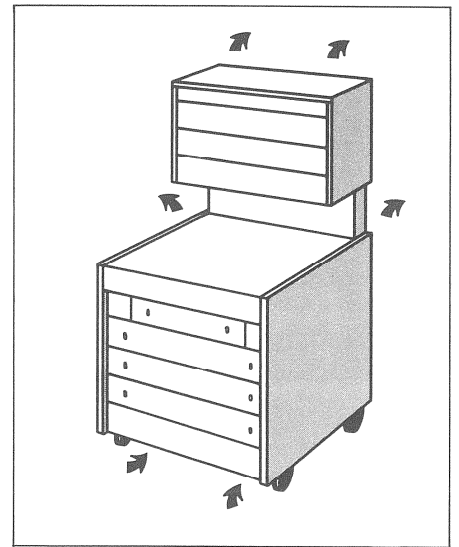


Fig. 2.2
Genügende Luftumwälzung beachten
Allow for sufficient air ventilation

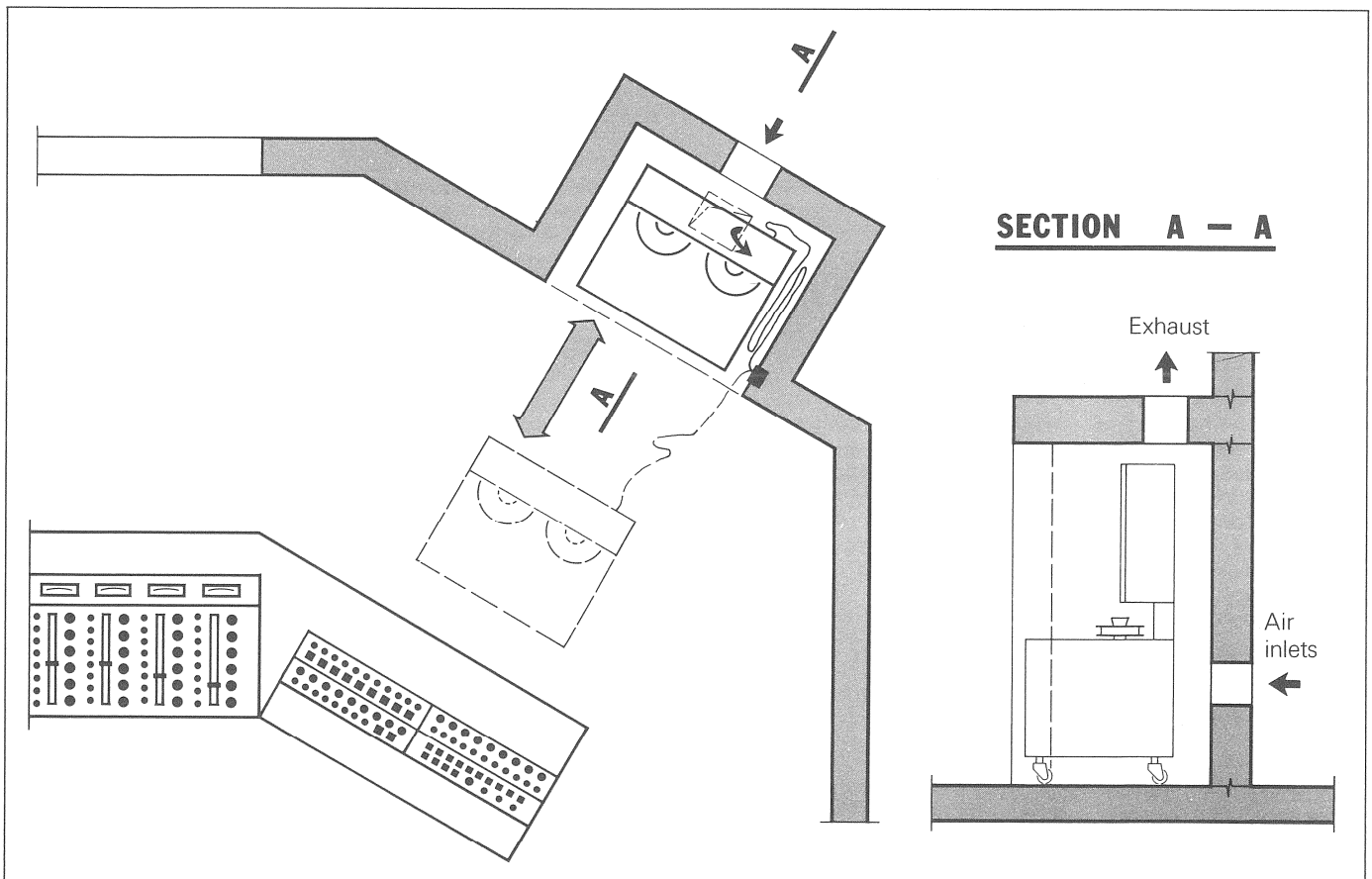


Fig. 2.3
Auf genügend Spielraum von Maschine und Kabeln achten!

Fig. 2.3
Please care for sufficient clearance of machine and cables!

- Besteht die Gefahr der Uebertragung von Vibrationen (mobile Studios), sind die Geräte vorzugsweise auf Schwingrahmen mit genügender Dämpfung aufzubauen.
Beachten, dass eine sichere Begrenzung und Fixierung bei maximalen Schwingungsamplituden besteht (Manövrieren des mobilen Studios).

- If the machine is subjected to vibrations (mobile-studios), it should be mounted on a shock-absorbing frame which provides sufficient damping. Make sure there is a safe limitation and locking for maximum vibration amplitudes (manoeuvring of the mobile studio).

2.3 SPANNUNGSWAHLER, SICHERUNGEN UND NETZ- FREQUENZANPASSUNG

Bevor die Maschine in Betrieb genommen wird, müssen unbedingt die Spannungswähler an die örtliche Netzspannung angepasst werden. Wenn nötig müssen auch die Primärsicherungen und der Phasenschieberkondensator für den Capstanmotor angepasst werden.

2.3 VOLTAGE SELECTORS, FUSES AND LINE FREQUENCY

Before you switch power on, check all voltage selectors and fuses. Locations and values as shown in figure 2.4. Replace the phase shift capacitor if necessary.

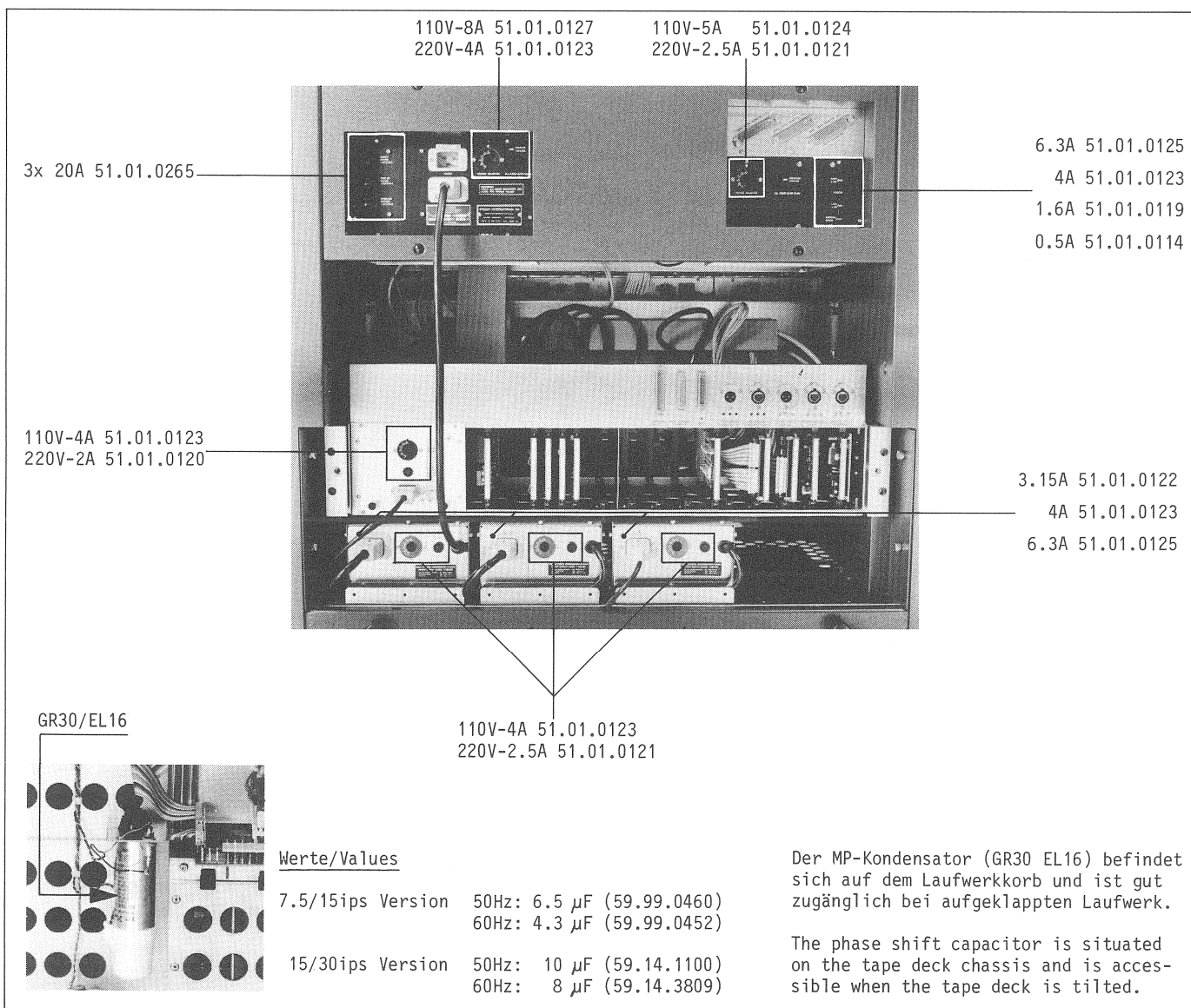


Fig. 2.4

2.4

SOFTWAREBESCHREIBUNG

Im folgenden Abschnitt wird ein kurzer Ueberblick über die wichtigsten Eigenschaften des Programmes gegeben, das die A800 steuert.

Die Beschreibung gilt für alle Maschinen, die mit MPU 1.180.482.83/84 und höher oder MPU 1.180.484.83/84 und höher bestückt sind.

2.4.1

Software-Vorteile

- Die Software benötigt immer alle 4 E-Prom auf der MPU-Karte 1.180.480.00 Die Software ist also dieselbe, ob die A800 für den Betrieb mit dem TLS2000 vorbereitet ist, oder nicht.
- Die Software vom 27.8.81 respektive 31.8.81 ist kompatibel mit der Autolocator-Software vom 12.7.79. Frühere Autolocator-Softwarestände müssen upgedatet werden.
- Die MPU-Karte mit der Software vom August 1981 erhält den Index .83 Also: 1.180.482.83 statt wie bisher 1.180.482.00.

2.4.2

Eigenschaften

Delay-Zeiten

Die Delay- Zeiten sind korrigiert worden für den Betrieb mit dem engen Kopfträger. Der Jumper auf dem Delay-Controller 1.180.551 ist entsprechend zu stecken:

- A: zwei Löschköpfe
- B: In-Line Löschkopf
- C: Enger Kopfträger mit In-Line Löschkopf

AUTO INPUT

- Das Input Signal liegt bei allen Kanälen an während den Laufwerkfunktionen FORW, REW, STOP und REC.
- Input ist von der Position der "Ready"-Taste abhängig, wenn auf dem Delay-Controller 1.180.551.81 die Pins 16B und 31 A/B/C mit einem Jumper verbunden werden.

2.4

SOFTWARE DESCRIPTION

Subsequently you find a short survey over the most important features of the program that controls the A800.

This description is valid for all machines equipped with MPU 1.180.482.83/84 and later or MPU 1.180.484.83/84 and later.

2.4.1

Software advantages

- The software always occuppies 4 E-Proms on the MPU board 1.180.480.00 Therefore, the software is the same whether the A800 is prepared for use with TLS2000 or not.
- The software dated August, 27 resp. August 31, 1981 is compatible with the autolocator software of July 12, 1979. Earlier autolocator software has to be updated.
- The MPU boards with the software of August 1981 is labelled with the index .83, i.e.: 1.180.482.83 instead of the old designation 1.180.482.00.

2.4.2

Features

Delay times

The delay times for the narrow headblock assembly have been corrected. The jumper on the delay controller 1.180.551 is to be set correspondingly:

- A: two erase heads
- B: In-line erase head
- C: Narrow headblock assembly with in-line erase head.

AUTO INPUT

- Input during spooling, stop and recording on all channels.
- Input dependent on position of the "Ready" button, provided pins 16B and 31 A/B/C on the delay controller 1.180.551.81 have been interconnected with a jumper.

Mute

- Taste nicht gedrückt:
Mute kurzzeitig bei folgenden Uebergängen, sofern der Code-Kanal aktiv ist:

Play→Stop, Stop→Play
Wind→Stop, Wind→Play
Edit→Play.

Kein Mute, wenn der Code Kanal nicht aktiv ist.

- Taste gedrückt:
2 Varianten sind möglich:
 - General Mute oder
 - Mute in Umspulen sowie Mute bei den Uebergängen
Play→Stop, Play→Edit

Für Mute im Umspulen ist eine Hardware-Modifikation nötig.

Mute

- Key not depressed:
Short duration muting with the following function changes, provided the code channel is active:

Play→Stop, Stop→Play
Wind→Stop, Wind→Play
Edit→Play.

No muting if code channel is inactive.

- Key depressed:
2 alternatives are possible:
 - General mute or
 - mute during fast wind as well as muting when changing from
Play→Stop, Play→Edit.

For Mute during fast wind, a hardware modification is required.

Varispeed

- Zusätzlich zur Varispeed-LED blinken neu auch die beiden Umspultasten FORW und REW abwechselungsweise.

- Anzeige der Verstimmung auf dem Timer Display wenn die Taste SET Varispeed gedrückt wird. Die Aenderung der Verstimmung wird sichtbar, wenn SET Varispeed und gleichzeitig eine der Tasten UP oder DOWN gedrückt wird.
Die effektive Geschwindigkeit V in % der Nominalgeschwindigkeit berechnet sich wie folgt:
(Z = angezeigte Zahl auf dem Timer Display)

$$V = \frac{1}{1 - \frac{Z}{32768}} \cdot 100\%$$

- Ist die Maschine mit Autolocator Interface 1.180.475 und Software nicht älter als 12.7.79 bestückt, bleibt die Verstimmung mit der neuen A800 Software abgespeichert auch wenn die Maschine ausgeschaltet wird.

Variospeed

- In addition to the Variospeed LED the FORW and the REW keys blink alternately while variospeed is active.

- Indication of the detuning on the timer display when set variospeed is depressed. The change in detuning becomes visible, if variospeed is depressed simultaneously with one of the UP and DOWN keys. The actual tape speed V in % of the rated speed is computed as follows:
(Z = number displayed)

$$V = \frac{1}{1 - \frac{Z}{32768}} \cdot 100\%$$

- If the machine is equipped with the autolocator interface 1.180.475 and if the software is not older than July 12, 1979, the variospeed detuning is stored by the new A800 software, even after the machine has been switched off.

Bandzähler

Ebenso wie Varispeed bleibt auch der Zählerstand gespeichert.

Tape counter

Just like the variospeed detuning, the counter reading is stored.

Autolocator

Das Interface 1.180.475.84 wird mit der Software 0167-4 bestückt. Rollback Eingaben bis 30s werden akzeptiert. Eingaben grösser als 30s werden als 30s abgespeichert. Es müssen immer 2 Ziffern eingegeben werden:

Eingabevorgang:

- Store
- Rollback
- 2 Ziffern

Die neue Software A800 läuft auch mit Autolocator Software älter als 12.7.79 aber nur mit 9s Rollback.

Einstiegszeiten

Die Einstiegszeiten beim Drücken der "Rec" Taste sind auf den Kopfträger optimiert. Kürzeste Zeit bei Betrieb mit dem engen Kopfträger (Anstiegsrampe der HF inbegriffen):

15 ips: 129ms
30 ips: 88ms

Drop out delay inhibit

Drop out delay inhibit wird automatisch aktiviert, wenn mit STOP aus einer Aufnahme ausgestiegen wird, statt mit PLAY.

Nur für MPU 1.180.482.83 und
MPU 1.180.484.84

Im Autolocatorbetrieb werden bei einem eventuellen Ueberschiessen und anschließenden Abfahren im Schlaufenbetrieb die mechanischen Bremsen früher gelöst als bei den MPU mit tieferen Indices.

Nur für MPU 1.180.482.85
sowie MPU 1.180.484.87

Diese MPU Karten sind vorbereitet für erweiterte Fernsteuerfunktionen (Option 1.180.098.00). Zum einwandfreien Funktionieren dieser Option muss zusätzlich das Tape Deck Interface 1.180.472.00 eingesetzt werden.

Autolocator

The autolocator interface 1.180.475.84 is equipped with software 0167-4. Rollback inputs up to 30s are possible. Two digits must always be entered.

Input procedure:

- Store
- Rollback
- 2 digits

The new software A800 also works in conjunction with the autolocator software of July 12, 1979, however without the changes described above

Drop in delay

The drop in delay after having pressed the REC button is optimized on the headblock.

Shortest delay with narrow headblock (including ramp of RF):
15 ips: 129ms
30 ips: 88ms

Drop out delay inhibit

Drop out delay inhibit is activated automatically when STOP is pressed after recording and not PLAY.

For MPU 1.180.482.83 and
MPU 1.180.484.84 only

In autolocator operation the machine might slightly overshoot when rewinding to the locate point. When the machine starts in FFORW to enter play mode afterwards, the mechanical brakes are loosened earlier than Index 83.

For MPU 1.180.482.85
and MPU 1.180.484.87

These MPU boards are prepared for operation with extended remote control functions (option 1.180.098.00). For perfect operation of this option it is necessary to insert the tape deck interface 1.180.472.00.

2.5 BEDIENUNGSANLEITUNG

2.5.1 Einleitung

Die Bedienungselemente der Studiotonbandmaschine A800 sind in zwei Funktionsgruppen aufgeteilt:

- Laufwerk
- Audio

Die Laufwerkbedienungselemente befinden sich auf der Konsole und sind gegliedert in drei Gruppen:

- Netzschalter mit Geschwindigkeitswähler
- Laufwerkfunktionstasten und Edit-Regler
- Laufwerksteuerung mit:
 - Varispeed
 - Adresslocator
 - Zerolocator

2.5 OPERATING INSTRUCTIONS

2.5.1 Introduction

The operating instructions for the studio tape recorder A800 have been divided into two sections:

- Tape transport
- Audio

The Tape transport controls are located on the console and are arranged in 3 groups:

- Power switch with speed selector
- Transport command keys and edit potentiometer
- Tape transport control with:
 - Varispeed
 - Addresslocator
 - Zerolocator

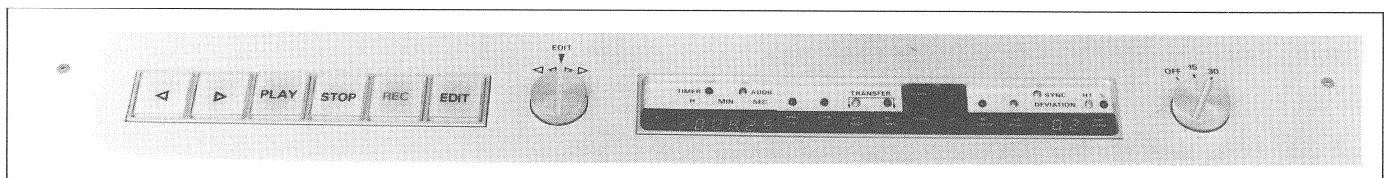


Fig. 2.5

Die Audiobedienungselemente befinden sich auf dem VU-Meteraufbau und umfassen:

- Kanalelektronik für jeden einzelnen Audiokanal

The audio controls are located on the VU-meter assembly and include:

- Channel electronics for each audio channel

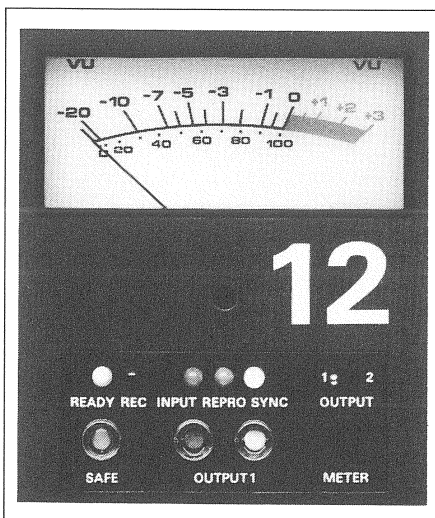


Fig. 2.6

- Masterpanel für übergeordnete Audio-funktionen:

- Masterpanel for coordinating audio-functions:

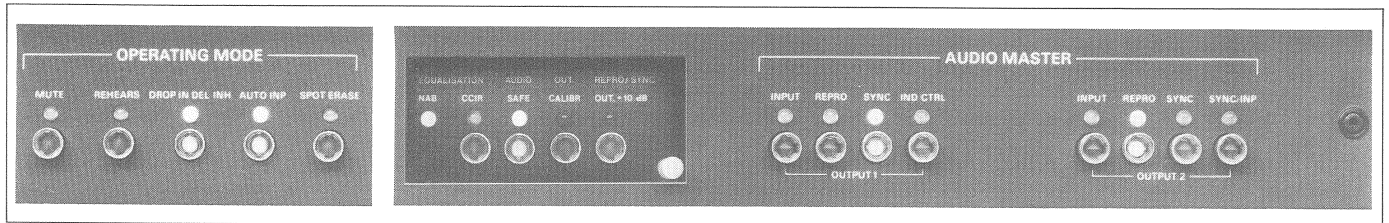


Fig. 2.7

für Fernsteuerfunktionen:

for remote control functions:

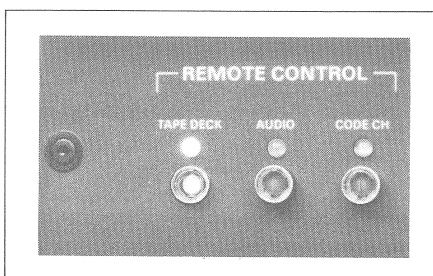


Fig. 2.8

sowie für die Steuerung des Codekanals: and for the code channel control:

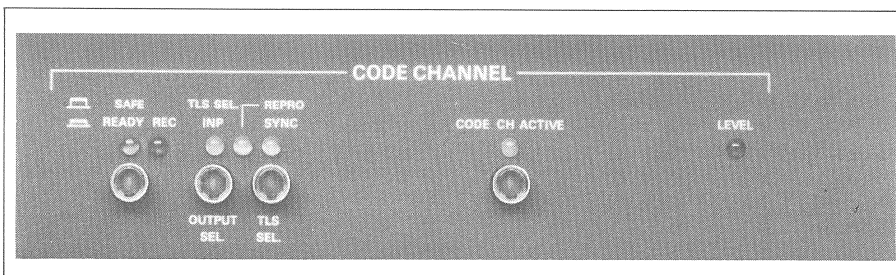


Fig.2.9

2.5.2 Funktionsbeschreibungen

LAUFWERK Netzschalter

Der Netzschalter befindet sich rechts aussen auf der Konsole und beinhaltet gleichzeitig den Bandgeschwindigkeitswähler.

Eine Drehung des Netzschalters im Uhrzeigersinn bis zur ersten Stufe schaltet die Maschine auf die kleine Bandgeschwindigkeit, die zweite Stufe entspricht der grossen Bandgeschwindigkeit. Die Betriebsbereitschaft der Maschine wird durch die leuchtende oder blinkende (siehe Abschnitt Laufwerk-tiptasten) Stoptaste angezeigt.

2.5.2 Description of functions

TAPE TRANSPORT Power switch

The power switch is located on the right-hand side of the console panel. It also serves as a tape speed selector. The slow speed is selected by turning the switch clockwise to the first position, the second clockwise position corresponds to the fast tape speed. The operational readiness of the recorder is signalled by the STOP key which is either continuously illuminated or flashing (refer to section "Command keys").

Laufwerktipptasten

STOP hält das Band aus jeder beliebigen Laufwerkfunktion an. Die Taste leuchtet, wenn die Maschine eingeschaltet, oder wenn diese Funktion angewählt wird.

Die Taste blinkt in folgenden Fällen:

- kein Band eingelegt
(Bandzugwaagen entlastet)
- Abschirmklappe vor den Tonköpfen offen.
- eine der folgenden Speisespannungen fehlt:
+5V, +12V, +24V
- eine Wickelmotorspeisespannung fehlt
- ein Wickelmotorleistungstransistor ist defekt

PLAY aktiviert die Wiedergabe aus jeder beliebigen Laufwerkfunktion. Aus dem Stop erfolgt der Start unter grösster Schonung des Bandmaterials, indem die Andruckrolle auf den PLAY-Befehl in Cutterstellung geht bis die Wickelmotoren das Band auf Sollgeschwindigkeit beschleunigt haben, erst dann erfolgt der Andruck.

Wird die PLAY-Funktion aus dem schnellen Vorlauf angewählt, erfolgt der Andruck sobald das Band auf Sollgeschwindigkeit abgebremst ist, also unter Umgehung der Stopfunktion.

PLAY REC startet das Band in Aufnahme, sonst identische Eigenschaften wie PLAY. Durch das Umstecken von Jumpern auf dem Print 1.180.436 (siehe Kapitel 4) ist es möglich, die Aufnahme mit der REC-Taste allein zu aktivieren.

EDIT aktiviert die variable Suchgeschwindigkeit. Solange der Edit-Regler nach unten gedrückt wird, kann das Band in beiden Richtungen mit frei wählbarer Geschwindigkeit bewegt werden. Mithören erfolgt durch Gedrückthalten der EDIT-Taste. Um die Tonköpfe zu schonen, empfiehlt es sich jedoch bei hohen Suchgeschwindigkeiten auf das Mithören zu verzichten. EDIT kann nicht aus dem Umspulen angewählt werden.

Command keys

STOP brings the tape to a stop from any operating mode. This key is illuminated after the machine has been switched on or if this function is specifically selected. This key flashes if one of the following conditions is detected:

- No tape threaded (tape tension sensor relaxed)
- Protective flap in front of soundheads is open
- One of the following supply voltages not present:
+5V, +12V, +24V
- One of the spooling motor supply voltages not present
- One of the spooling motor power transistors defective.

PLAY activates the reproduce function from any operating mode. To protect the tape when the PLAY function is entered from stop mode, the pinch roller waits in the cutter position and does not press against the tape until the spooling motors have accelerated the tape to its nominal speed.

If the PLAY function is entered from fast forward mode, the pinch roller presses against the tape as soon as the tape has decelerated to its nominal speed, i.e. the stop function is bypassed.

PLAY REC starts the tape in recording mode. All other characteristics are identical to those described for PLAY. By repositioning certain jumpers on circuit board 1.180.436 (refer to section 4) it is possible to activate the recording function with the REC key alone.

EDIT activates the variable search speed. As long as the edit potentiometer is held down, the tape can be spooled in either direction with any speed. Cueing is possible as long as the EDIT key is pressed. To protect the heads against unnecessary wear, the cueing function should not be activated at high tape speeds. The EDIT function cannot be activated from spooling mode.

 aktiviert den schnellen Rücklauf, kann aus jeder beliebigen Laufwerkfunktion angewählt werden.

 Activates the fast rewind; can be selected from any operating mode.

 aktiviert den schnellen Vorlauf, kann aus jeder beliebigen Laufwerkfunktion angewählt werden.

 Activates the fast forward; can be selected from any operating mode.

Die beiden oben genannten Tasten blinken abwechselungsweise, wenn Varispeed aktiv ist (siehe Abschnitt Laufwerksteuerung)

These two flash alternately when the varispeed function is active (refer to section "Tape transport control").

LAUFWERKSTEUERUNG

TAPE TRANSPORT CONTROL

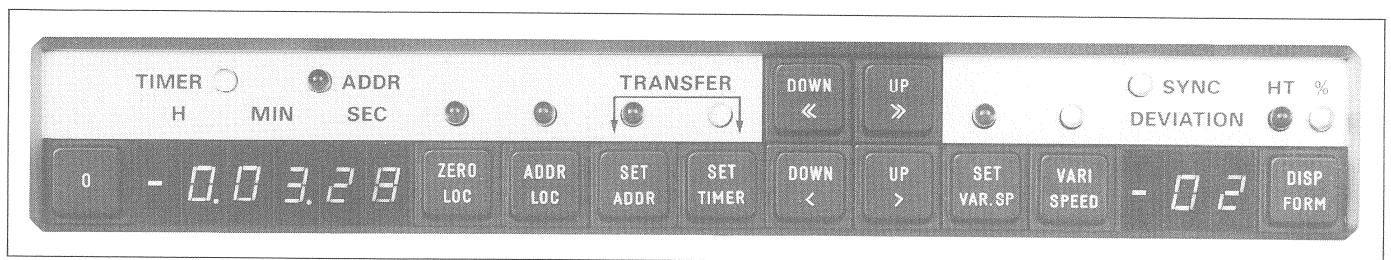


Fig. 2.10

Die Laufwerksteuerung enthält folgende Bedienungs- und Anzeigeeinheiten:

The tape transport control comprises the following operator controls and displays:

- | | |
|---|---|
| - Bandzähleranzeige 6-stellig, geeicht in h, min, sec bei jeder Geschwindigkeit | - Tape counter display, 6 positions, calibrated in h, min, sec at any speed |
| - RESET-Taste zu Bandzähler | - RESET button for tape counter |
| - Zero-Locator zum Anfahren des Zähler-nullstandes | - Zero locator for searching the zero position |
| - Address-Locator zum Anfahren einer beliebigen, vorher programmierten Adresse | - Address locator for searching any preprogrammed tape address |
| - SET ADDR-Taste um eine beliebige Adresse zu programmieren | - SET ADDR button for programming a tape address |
| - SET TIMER-Taste um den aktuellen Bandzählerstand zu programmieren | - SET TIMER button for programming the current tape counter reading |
| - UP und DOWN Tasten um Zähler, Vari-speed und Adressen zu programmieren. | - UP and DOWN keys for programming the counter, the address and the vario-speed. |
| - SET VARI SPEED um eine gewünschte Geschwindigkeitsabweichung zu programmieren | - SET VARI SPEED for programming the desired speed deviation |
| - VARI SPEED um die programmierte Geschwindigkeitsabweichung zu aktivieren | - VARI SPEED to activate the programmed speed deviation |
| - Anzeige der Geschwindigkeitsabweichung in % oder Halbtönen, wählbar mit Taste DISP FORM | - Displaying the speed deviation in % or semitones, format selectable with DISP FORM button |

BESCHREIBUNG DER EINHEITEN

TIMER ☐ ☒ ADDR
H MIN SEC

Bandzähleranzeige, 6-stellig

Sofort nach dem Einschalten der Maschine erscheint auf dem Display das Datum der eingebauten Software. Nach ca. 1 Sekunde geht die Anzeige bei Maschinen, die mit Autolocatorinterface ausgerüstet sind, auf den Zählerstand über, der vor dem Ausschalten der Maschine in der Anzeige war.

DESCRIPTION OF THE VARIOUS CONTROLS

Tape counter display, 6 positions

After the recorder has been switched on, the date of the installed software is indicated on the display. In recorders equipped with the autolocator interface, this data disappears after approx. 1 second and the counter reading is displayed which was in effect at the time the recorder was switched off.

RESET-Taste

zum 0-Setzen des Zählers.

RESET button

for zero setting the counter.

ZERO-LOCATOR

Diese Taste ermöglicht das Anfahren der Zähleradresse 0. Die LED über der Taste leuchtet solange der Suchvorgang nicht beendet ist. Diese Funktion kann aus jeder beliebigen Laufwerkfunktion angewählt werden.

ZERO LOCATOR

This button is used for searching the counter address 0. The LED above this button stays on until the search process is completed. This function can be selected from any operating mode.

ADDRESS-LOCATOR

Beim Betätigen dieser Taste fährt die Maschine diejenige Adresse an, die mit SET ADDRESS (siehe später) programmiert wurde. Die LED über der Taste leuchtet solange der Suchvorgang nicht abgeschlossen ist. Diese Funktion kann aus jeder Laufwerkfunktion angewählt werden.

ADDRESS LOCATOR

When this button is pressed, the recorder searches for the tape address that has been programmed with SET ADDRESS (see later). The LED above this button stays on until the search process is completed. This function can be selected from any operating mode.

**SET ADDRESS**

Mit dieser Taste kann eine beliebige Zähleradresse programmiert werden, die später mit Address Locate sofort angefahren werden kann.

Beispiel: Die Adresse 2h 23 min.10 sec. soll programmiert werden.

- Taste SET ADDR drücken, jetzt leuchtet die ADDRESS LED über dem Zähler-Display, der Display zeigt die letzte programmierte Adresse oder 0 an. Die LED über der Taste SET ADDR leuchtet ebenfalls um zu zeigen, dass diese Funktion momentan aktiv ist. Jetzt kann mit den Tasten UP und DOWN die Adresse 2h 23min. 10s eingegeben werden, wobei UP >> und DOWN << schnelle Zählgeschwindigkeit und UP > und DOWN < langsame Zählgeschwindigkeit bedeuten.
- Durch nochmaliges Drücken der Taste SET ADDR wird der Programmiervorgang abgeschlossen, die SET ADDR LED und die ADDR LED verlöschen. Der Display zeigt wieder den aktuellen Bandzählerstand, die Timer-LED über dem Display leuchtet. Wenn nötig kann die Adresse während des Locate-Vorganges umprogrammiert werden, ohne dass die Maschine angehalten werden muss.

SET ADDRESS

This button is used for programming a tape address which can subsequently be searched with the address locate function.

Example: The address 2h 23 min.10 sec. is to be programmed.

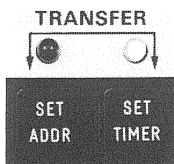
- Press SET ADDR button. The ADDRESS LED above the counter display lights up, the display indicates the last programmed address or zero. The LED above the SET ADDR button also lights up to signal that the function is enabled. By pressing UP or DOWN the address 2h 23min. 10s can now be entered, where UP >> and DOWN << activate the fast counting speed and UP > and DOWN < the slow counting speed.
- The programming operation is terminated by pressing SET ADDR a second time. The SET ADDR LED and the ADDR LED turn off. The display again indicates the current tape counter value and the timer LED above the display turns on. If necessary, the address can be reprogrammed while the locate function is in progress without stopping the recorder.

**SET TIMER**

Mit dieser Taste kann ein gewünschter aktueller Zählerstand programmiert werden. Vorgehen genau gleich wie bei SET ADDR. Der Programmiervorgang wird durch nochmaliges Drücken der Taste SET TIMER abgeschlossen.

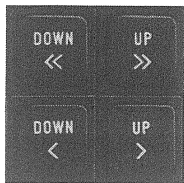
SET TIMER

This button is used for setting the counter to any value. The procedure is the same as described for SET ADDR. The programming operation is terminated by pressing SET TIMER a second time.



Die Kombination der beiden Tasten SET TIMER und SET ADDR eröffnet eine zusätzliche Möglichkeit: Werden diese beiden Tasten gleichzeitig gedrückt, so wird der momentane Zählerstand ins Adress-Register kopiert, so dass diese Adresse später mit ADDRESS-LOCATE sofort wieder angefahren werden kann.

The functions SET TIMER and SET ADDR can also be used in combination: If these two buttons are pressed concurrently, the current counter reading is copied into the address register so that it can subsequently be searched with the ADDRESS LOCATE function.

UP und DOWN

Programmiertasten für Adresse, Zähler und Varispeed.

UP and DOWN

Keys for programming the address, the counter and the variespeed.

SET VARISPEED

Nach Betätigung dieser Tasten kann mit den Tasten UP >>, > und DOWN <<, < eine beliebig wählbare Geschwindigkeitsabweichung von der Nominalgeschwindigkeit im Bereich von $\pm 7,5$ Halbtönen resp. $-34\ldots+50\%$ programmiert werden.

SET VARISPEED

After this function has been activated, any deviation from the nominal speed within the range $\pm 7,5$ semitones or $-34\ldots+50\%$ can be selected by pressing the buttons UP >>, > and DOWN <<, <

VARI SPEED

Durch Betätigen dieser Taste geht die Maschine auf die vorher mit SET VARI-SPEED eingestellte Geschwindigkeit. Die LED über der Taste blinkt, ebenso blinken die beiden Tasten FORW und REW abwechselungsweise.

VARI SPEED

When this button is pressed, the recorder switches to the speed that has been previously programmed with SET VARISPEED. The LED above the button blinks and the lamps in the two buttons FORW and REW flash alternately.

Unmittelbar nach dem Betätigen der VARISPEED-Taste verlöscht die SYNC-LED über dem DEVIATION-Display um zu zeigen, dass der Capstan die neue Geschwindigkeit noch nicht erreicht hat. Sobald die Sollgeschwindigkeit erreicht ist, d.h. der Capstan quartsynchron läuft, leuchtet die SYNC-LED wieder auf.

As soon as the VARISPEED buttons is pressed, the SYNC LED above the DEVIATION display turns off to signal that the capstan has not yet reached the new speed. As soon as the programmed speed has been reached, i.e. the capstan is quartz-synchronized, the SYNC LED turns on again.



Der Display DEVIATION zeigt die eingelebte Abweichung in Halbtönen oder in % der Nominalgeschwindigkeit an. Ist eine bessere Ablesegenauigkeit der Abweichung gewünscht, so kann die Taste SET VARISPEED gedrückt werden. Während die Taste gedrückt bleibt, erscheint auf dem Zähler Display eine Zahl Z, die ebenfalls ein Mass für die Verstimmung ist, jedoch mit einer Auflösung von max. 5 Stellen.

Beispiel:

Für die Abweichung +10% liegt Z zwischen 2843 und 3113. Wird nun diese Zahl Z in die untenstehende Formel eingesetzt, erhält man als Resultat die Abweichung in % mit wesentlich besserer Genauigkeit.

$$\Delta \% = \frac{1}{1 - \frac{Z}{32768}} \cdot 100 - 100$$

Example: Z = 2900

$$\Delta \% = \frac{1}{1 - \frac{2900}{32768}} \cdot 100 - 100 = \underline{9,7094\%}$$

Soll zu einem späteren Zeitpunkt dieselbe Abweichung eingestellt werden, so muss mit SET VARISPEED und den Tasten UP und DOWN wiederum die Zahl 2900 eingegeben werden. Verfügt die Maschine zusätzlich über ein Autolocator Interface, so bleibt die Varispeed Einstellung auch nach dem Ausschalten der Maschine gespeichert.

The DEVIATION display indicates the programmed deviation, expressed in semitones or in % of the nominal speed. If the deviation must be determined with greater accuracy, the SET VARISPEED button can be pressed. While this button is held down, a value Z is indicated on the display which is also a measure of the speed deviation, however with a resolution of up to 5 digits.

Example:

For a deviation of +10%, the value for Z ranges between 2843 and 3113. When Z in the formula below is substituted by the actual value, the result reflects the deviation in %, however with a much greater accuracy.

$$\Delta \% = \frac{1}{1 - \frac{Z}{32768}} \cdot 100 - 100$$

Beispiel: Z = 2900

$$\Delta \% = \frac{1}{1 - \frac{2900}{32768}} \cdot 100 - 100 = \underline{9,7094\%}$$

If the same deviation is to be reprogrammed later, the value for Z (in this example 2900) must be reentered with SET VARISPEED and the UP and DOWN keys. If the recorder is equipped with an autolocator interface, the varispeed setting is not lost when the machine is switched off.



DISP FORM

Mit dieser Taste lässt sich das Anzeigeformat der Geschwindigkeitsabweichung wählen. Die Abweichung kann entweder in Halbtönen oder in % der Nominalgeschwindigkeit angezeigt werden. Das gewählte Format wird durch die entsprechende LED über der Taste angezeigt.

DISP FORM

This button is used for selecting the display format of the speed deviation. The deviation can either be represented in semitones or in % of the nominal speed. The selected format is indicated by the corresponding LED above the button.

AUDIO
Kanalsteuereinheit

AUDIO
Channel control unit

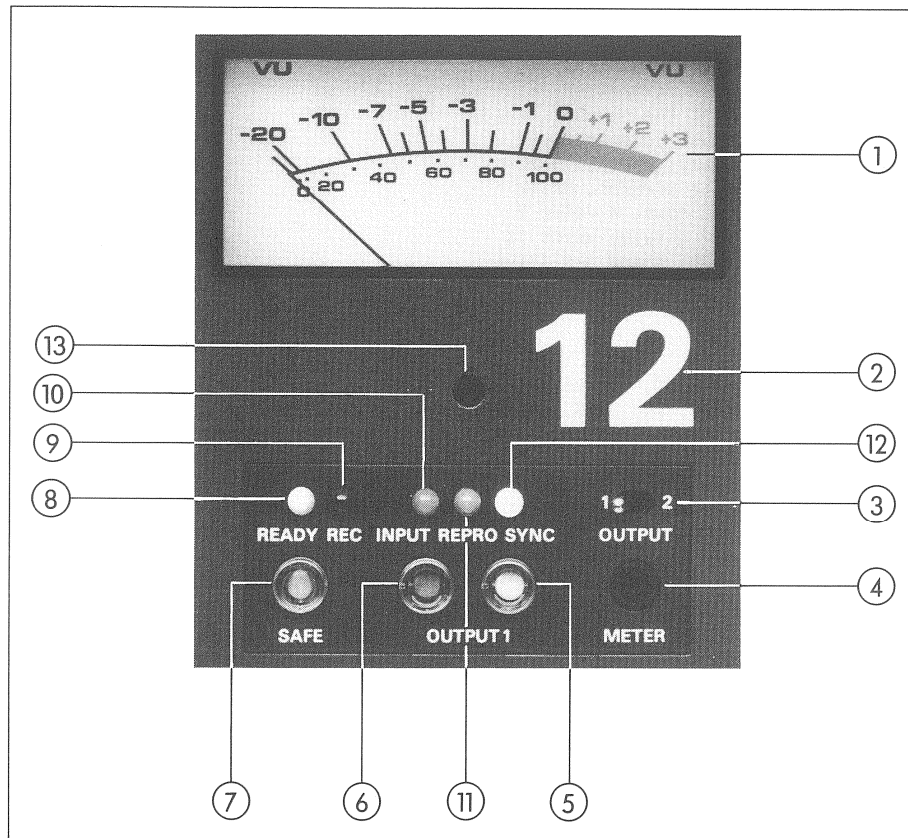


Fig. 2.11

- 1 = VU-Meter
- 2 = Kanalnummer
- 3 = Ausgangswählschalter für VU-Meter und Jack
- 4 = Jack Ausgang des Kanals
- 5 = Ausgangswähltasten
- 6 = für Ausgang 1
- 7 = SAFE/READY-Taste
- 8 = READY-LED
- 9 = REC-LED
- 10 = INPUT-LED
- 11 = REPRO-LED
- 12 = SYNC-LED
- 13 = Mechanische Nullpunkteistellung

VU-METER

Das VU-Meter zeigt immer das am Ausgang 1 oder 2 anliegende Signal an (umschaltbar mit Schalter 3). Die Helligkeit der VU-Meterbeleuchtung lässt sich zentral für jeweils 8 Instrumente in 2 Stufen verstellen (siehe Kapitel 7, Seite 5)

- 1 = VU-meter
- 2 = Channel number
- 3 = Output selector switch for VU-meter and jack
- 4 = Jack output of channel
- 5 = Output selector buttons
- 6 = for output 1
- 7 = SAFE/READY button
- 8 = READY LED
- 9 = REC LED
- 10 = INPUT LED
- 11 = REPRO LED
- 12 = SYNC LED
- 13 = Mechanical zero adjustment

VU-METER

The VU-meter always indicates the signal available at output 1 or 2 (selectable with switch 3). The brightness of the VU-meter illumination can be adjusted in 2 steps from a single control for up to 8 instruments (refer to section 7, page 5)

SAFE/READY

Taste nicht gedrückt:

Aufnahme für den betreffenden Kanal gesperrt.

Taste gedrückt:

Eine Aufnahme ist möglich*, wird angezeigt durch die grüne READY-LED. Bei Aufnahme leuchtet die rote REC-LED.

* Die SAFE-Taste hinter dem Schiebefenster auf dem Masterpanel darf nicht gedrückt sein (siehe Abschnitt Masterpanel).

OUTPUT 1 - Tasten

Falls beim AUDIO-MASTER OUTPUT 1 auf dem Masterpanel die Taste IND CTRL (Individual Control) gedrückt ist, lässt sich der Ausgang 1 mit den Tasten 5 und 6 wie folgt schalten:

- Beide Tasten gleichzeitig gedrückt oder nicht gedrückt:
Das Wiedergabesignal ab Wiedergabekopf wird auf den Ausgang 1 geschaltet, die REPRO-LED leuchtet.
- Nur die linke Taste gedrückt:
Das Eingangssignal wird auf Ausgang 1 geschaltet, die INPUT-LED leuchtet.
- Nur die rechte Taste gedrückt:
Das Wiedergabesignal ab Aufnahmekopf wird auf Ausgang 1 geschaltet, bei Aufnahme das Eingangssignal. Die SYNC-LED leuchtet.

JACK-Buchse

An der Jack-Buchse kann zu Mess-, oder Kontrollzwecken ein Kopfhörer oder ein Messinstrument angeschlossen werden. An der Buchse liegt das Ausgangssignal von Ausgang 1 oder 2 an, je nachdem in welcher Stellung der Ausgangswahlschalter 3 steht. Dieser schaltet gleichzeitig mit der Jack-Buchse auch das VU-Meter um.

MASTER-PANEL

Am Masterpanel lassen sich übergeordnete Funktionen anwählen, wie:

- Bedienungsprioritäten (A800/Remote Control)
- Betriebsarten
- Audiobefehle für alle Kanäle
- Codekanalsteuerung (Option)

SAFE/READY

Button released:

Recording on the corresponding channel is inhibited.

Button pressed:

Recording is enabled* as indicated by the green READY LED. During actual recording the red REC LED turns on.

* The SAFE button behind the sliding window on the master panel must be released (refer to section "Master panel").

OUTPUT 1 buttons

If the IND CTRL (individual control) button is pressed for the AUDIO MASTER OUTPUT 1 on the audio master panel, output 1 can be connected to buttons 5 and 6 as follows:

- Both buttons pressed or released simultaneously:
the reproduce signal from the reproducing head is connected to output 1, the REPRO LED lights up.
- Only the left-hand button is pressed:
the input signal is connected to output 1, the INPUT LED lights up.
- Only the right-hand button is pressed:
the reproduce signal from the recording head is connected to output 1, or in recording mode, the input signal is connected to output 1. The SYNC LED lights up.

JACK socket

For measuring or monitoring purposes, a test instrument or headphones can be connected to the jack socket. The output signal of output 1 or 2 is available at this socket, depending on the position of switch 3. This switch changes over the VU-meter concurrently with the signal of the jack socket.

MASTER PANEL

The master panel is used for selecting coordinating functions such as:

- Operating priority (A800/Remote control)
- Operating modes
- Audio commands for all channels
- Code channel control (option)



REMOTE CONTROL

TAPE DECK

- Taste nicht gedrückt:
Sämtliche Laufwerkfunktionen können an der Maschine bedient werden.
 - Taste gedrückt:
Die Laufwerkfunktionen können nur* von den Peripherie-Geräten aus bedient werden (z.B. Autolocator, TLS 2000).
- * auf Wunsch können die Laufwerkfunktionen von der Maschine und von der Fernsteuerung aus bedient werden.

AUDIO

- Taste nicht gedrückt:
Die Audiokanäle werden an den Kanaleinheiten der Maschine bedient.
- Taste gedrückt:
Die Audiokanäle können nur von einer externen Kanalfernsteuerung aus bedient werden.

CODE CHANNEL (OPTION)

- Taste nicht gedrückt:
Der Code-Kanal wird vom Masterpanel der Maschine aus bedient (siehe Abschnitt Code-Kanal).
- Taste gedrückt:
Der Code-Kanal wird von einer Fernsteuerung aus bedient.

REMOTE CONTROL

TAPE TRANSPORT

- Button released:
all operating modes can be selected from the local command keys.
- Button pressed:
the operating mode can only be selected* from peripheral devices (e.g. Autolocator, TLS 2000).

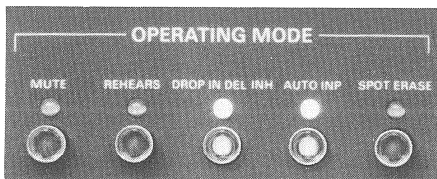
* As an option, the operating mode can be selected with the local command keys and from the remote control.

AUDIO

- Button released:
the audio channels are operated from the channel controls on the recorder.
- Button pressed:
the audio channels can only be operated from an external channel control device.

CODE CHANNEL (OPTION)

- Button released:
the code channel is operated from the master panel of the recorder (see section "Code channel").
- Button pressed:
the code channel is operated from a remote control device.



OPERATING MODE

MUTE

hier gibt es drei verschiedene Möglichkeiten:

- Standard:
alle Audio-Ausgänge Mute
- Spezial:
Mute nur während dem Umspulen und softwarebedingten transienten Vorgängen.
- zusätzlich mit Reproverstärker 1.80.710-82 steckbar:
Kanäle gehen beim Umspulen auf INPUT und werden nicht gemuted, falls folgende Bedingungen erfüllt sind:
Audiokanäle in SYNC und READY
Autoinput und Mute gedrückt auf dem Masterpanel.

OPERATING MODE

MUTE

There are three possibilities:

- Standard:
all audio outputs are muted
- Special:
muting only during spooling and software-related transient processes
- Plug-selectable with repro amplifier 1.180.710-82:
during spooling, channels are switched to INPUT and are not muted if the following conditions are met:
Audio channels in SYNC and READY.
The autoinput and the mute button on the master panel are pressed

REHEARS

Mit dieser Taste kann der elektronische Schnitt simuliert werden. Alle Kanäle die in SYNC und READY stehen, gehen auf INPUT, sobald die Maschine in Aufnahme gestartet wird, die übrigen Kanäle laufen in SYNC. Die Maschine nimmt aber nicht auf (REC-LED leuchtet nicht), die PLAY-Taste blinkt im Rehears-Modus.

So kann man eine Sequenz, die man in eine bereits bestehende Aufnahme einfügen möchte, so lange modifizieren, (Pegel, Equalizer, Timing) bis sie genau passt, dann die Rehears-Taste entriegeln und die Aufnahme machen. Besonders interessant ist diese Funktion, wenn man die Sequenz, die man einfügen möchte, genau zur bestehenden Aufnahme synchronisieren kann (z.B. mit TLS 2000 oder ähnlichem Synchronisierungssystem).

DROP IN DELAY INHIBIT

Mit dieser Taste lässt sich die Startverzögerung, mit der die Maschine in Aufnahme geht, ausschalten:

Sog. "Hartes Einstiegen".

Dabei findet allerdings eine kurze Überlappung der alten Aufnahme mit der neuen statt.

Beispiel:

Die Maschine läuft in PLAY und an einer genau bestimmten Stelle möchte man eine Sequenz einfügen. Drückt man Drop In Del Inh, geht die Maschine auf den Befehl PLAY REC zeitverzugslos in Aufnahme sobald der gewünschte Einstiegszeitpunkt gekommen ist.

Die Maschine verfügt ebenfalls über ein automatisches "drop out delay inhibit":

REC → PLAY: Ausstieg mit Delay

REC → STOP: Ausstieg ohne Delay

AUTO INPUT

Wenn diese Taste gedrückt ist, werden in STOP, schnellem Vor- und Rücklauf die Eingangssignale auf die Ausgänge aller Kanäle geschaltet.

Auto Input wirkt wahlweise auf alle Kanäle, oder nur auf die Kanäle in Ready. Die Umschaltung erfolgt mittels Jumper (siehe Kapitel 4).

SPOT ERASE

Wenn diese nicht rastende Taste kurz gedrückt wird, leuchtet die zugehörige LED für ca. 2-3 Sekunden auf. Betätigt man innerhalb dieser Zeit die beiden Laufwerkstasten EDIT und REC gleichzeitig, so wird der manuelle Löschvorgang aktiviert, d.h. alle nicht durch SAFE geschützten Kanäle können gelöscht werden, indem man das Band von Hand vor den Köpfen hin und her bewegt. So können kleine Versprecher, Schaltknackse o.ä. elegant gelöscht werden. Der Spot Erase Modus wird durch das Blinken der Spot Erase LED und der beiden Laufwerkstasten STOP und EDIT angezeigt.

REHEARS

This button is used for simulating electronic cutting. All channels that are in SYNC and READY mode are switched to INPUT as soon as the machine is started in recording mode; the other channels continue to operate in SYNC mode. However, no actual recording takes place in REHEARS mode (REC LED not on), but the PLAY key flashes.

In this manner an insert into an existing recording can be modified (level, equalization, timing) until it fits precisely, at which point the operator releases the rehearse button to enable the recording. This function is especially valuable if the insert must be accurately synchronized with an existing recording (e.g. with TLS 2000 or similar synchronization system).

DROP IN DELAY INHIBIT

This button inhibits the delay with which the recorder enters the recording mode; this mode is also referred to as "hard drop-in".

However, a brief overlap between the old and the new recording will occur.

Example:

the recorder operates in PLAY mode and a sequence is to be inserted at a specific tape location. By pressing the DROP IN DELAY INHIBIT button, the recording can be started without delay by pressing PLAY REC as soon as the desired entry point has been reached.

The recorder is also equipped with an automatic DROP OUT DELAY INHIBIT:

REC → PLAY: Drop-out with delay

REC → STOP: Drop-out without delay

AUTO INPUT

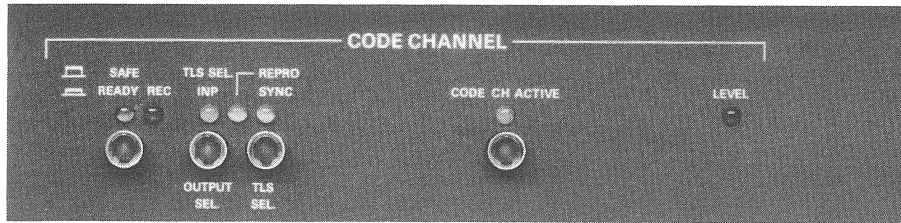
When this key is pressed, the input signals are connected to the outputs of all channels when the recorder operates in STOP or spooling mode.

The audio input can be programmed with a jumper (refer to section 4) to affect all channels or only the channels that are in ready mode.

SPOT ERASE

When this spring-release switch is briefly pressed, the corresponding LED lights up for approximately 2-3 seconds. If the EDIT and the REC keys are simultaneously pressed during this period, the manual erase operation is activated, i.e. all channels that are not protected by SAFE can be erased by manually reciprocating the tape in front of the heads. Minor speech faults, switching clicks etc. can thus be deleted in a simple manner.

The spot erase mode is indicated by the flashing spot erase LED and the keys STOP and EDIT.

CODE CHANNELCODE CHANNEL

Der Codekanal ist bei allen Maschinen der Audiokanal mit der höchsten Nummer, z.B. 8, 16 oder 24.

In all recorders, the code channel is always the audio channel with the highest number, e.g. 8, 16, or 24.

SAFE/READY

- Taste nicht gedrückt: Aufnahme auf Code-Kanal gesperrt.
- Taste gedrückt: Aufnahme auf Code-Kanal möglich, wird angezeigt durch READY-LED.

SAFE/READY

- Button released: recording on code channel inhibited.
- Button pressed: recording on code channel enabled, signalled by READY LED.

OUTPUT/TLS-SELECTOR

Zur Erklärung dieser beiden Tasten ein stark vereinfachtes Blockschaltbild einer A800, als Slave eingesetzt, gekoppelt mit dem TLS2000:

OUTPUT/TLS-SELECTOR

The function of these two keys can best be explained with a simplified block diagram of an A800 recorder, used as slave machine, coupled with the TLS2000:

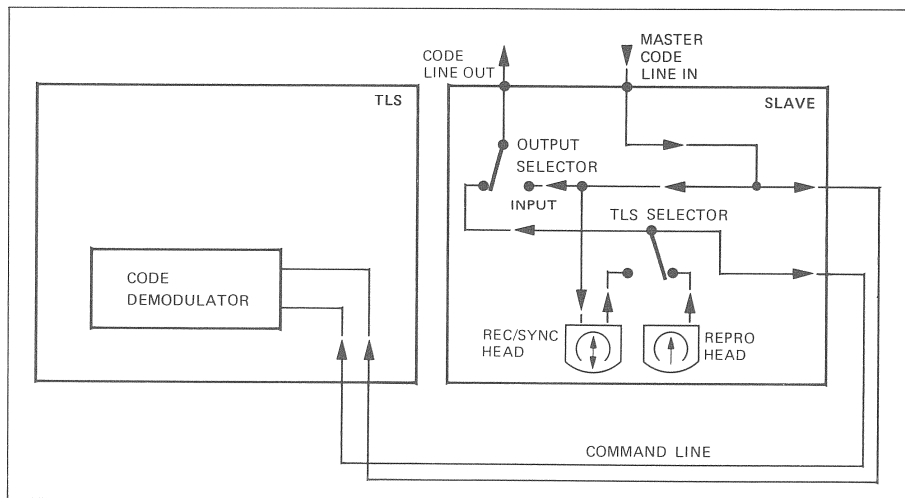


Fig. 2.12

Aus dem Blockschaltbild wird ersichtlich, dass mit dem TLS-SELECTOR gewählt werden kann, von welcher Quelle (Repro-, oder Sync-Kopf) das Codesignal dem Code-Demodulator des TLS zugeführt werden soll. Dasselbe Signal wird auch auf den Code-Ausgang CODE LINE OUT gegeben, sofern der OUTPUT SELECTOR nicht auf INPUT steht. Steht er nämlich auf INPUT, so finden wir am Code Ausgang das Master-Codesignal.

Die Wahrheitstabelle für die beiden Tasten und die zugehörigen LEDs sieht wie folgt aus:

As can be seen from the block diagram, the TLS-SELECTOR is used for determining the source (repro-, or sync head) from which the code signal is to be input to the code demodulator of the TLS. The same signal is also taken to the code output CODE LINE OUT, provided the OUTPUT SELECTOR is not in the INPUT position. If this selector is switched to INPUT, the master code input signal will be available at the output.

The truth table for these buttons and the corresponding LEDs looks as follows:

OUTPUT SEL.	TLS SEL.	INPUT	REPRO	SYNC
				
				
				
				
	BUTTON RELEASED			
	BUTTON DEPRESSED			
			LED DARK	
			LED ILLUMINATED	

Fig. 2.13

Die Repro-, und die Sync-LED zeigen die Stellung des TLS-SELECTORS an (Quelle für den TLS-Demodulator), die Input-LED zeigt die Stellung des OUTPUT-SELECTORS an (INPUT oder das selbe Signal, das zum TLS-Demodulator geführt wird, d.h. Repro oder Sync).

The repro- and the sync-LED are showing the state of the TLS-SELECTOR (source signal for the TLS-Demodulator), the Input-LED shows the state of the OUTPUT SELECTOR (INPUT or the same signal that is fed to the TLS-Demodulator, i.e. repro or sync).

CODE CHANNEL ACTIVE

- Taste nicht gedrückt: Audiokanal mit der höchsten Nummer arbeitet als Audiokanal.
- Taste gedrückt: Audiokanal mit der höchsten Nummer arbeitet als Codekanal. (nur mit TLS2000).

CODE CHANNEL ACTIVE

- Button released: The audio channel with the highest index works as audio channel.
- Button pressed: The audio channel with the highest index operates as code channel (option only).

ACHTUNG

Die Taste CODE CHANNEL ACTIVE darf nur umgeschaltet werden, wenn die Maschine auf Stop steht oder ausgeschaltet ist.

CAUTION

Depress the CODE CHANNEL ACTIVE button only when the recorder is in stop mode or switched off.

LEVEL-LED

Leuchtet auf sobald Signal auf dem Code-Kanal vorhanden ist.

LEVEL LED

Lights up as soon as a signal is available on the code channel.

Versenkte Steuerelemente (hinter Kunststoffschieber)



EQUALIZATION

- Taste nicht gedrückt: Entzerrung NAB
- Taste gedrückt: Entzerrung CCIR

AUDIO (SAFE)

- Taste nicht gedrückt: Aufnahme möglich für alle Kanäle in Ready
- Taste gedrückt: Aufnahme gesperrt für alle Kanäle

OUT

- Taste nicht gedrückt: Ausgänge individuell gepegelt
- Taste gedrückt: Alle Leistungsverstärker sind zu Mess- oder Kontrollzwecken auf definierte Verstärkung geschaltet.

REPRO/SYNC

- Taste nicht gedrückt: Repro- und Syncverstärker individuell gepegelt
- Taste gedrückt: Alle Repro- und Syncverstärker werden zu Mess- oder Kontrollzwecken um 10dB verstärkt.

Recessed controls (behind plastic slide)

EQUALIZATION

- Button released: NAB equalization
- Button pressed: CCIR equalization

AUDIO (SAFE)

- Button released: recording enabled for all readied channels
- Button pressed: recording inhibited for all channels.

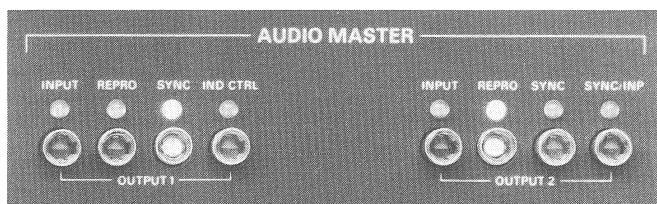
OUT

- Button released: level of outputs controlled individually
- Button pressed: all line amplifiers are switched to a defined gain for measuring or checking purposes.

REPRO/SYNC

- Button released: level of repro and sync amplifiers controlled individually
- Button pressed: all repro and sync amplifiers are boosted by 10dB for measuring or checking purposes.

AUDIO MASTER



OUTPUT 1

INPUT

Alle Kanäle schalten auf das Eingangssignal. Die Input LEDs leuchten bei allen Kanälen.

REPRO

Alle Kanäle schalten auf Wiedergabe. Die Repro LEDs leuchten bei allen Kanälen.

SYNC

Alle Kanäle schalten auf Wiedergabesignal ab Aufnahmekopf. Die Sync LEDs leuchten bei allen Kanälen.

IND CTRL (Individual control)

Alle Kanäle können von ihrer zugehörigen Kanalsteuereinheit beliebig geschaltet werden.

AUDIO MASTER

OUTPUT 1

INPUT

All channels switch to the input signal. The input LEDs of all channels light up.

REPRO

All channels switch to reproduction. The repro LEDs of all channels light up.

SYNC

All channels switch to reproduce from recording head, or to input when operating in recording mode. The sync LEDs of all channels light up.

IND CTRL (Individual control)

All channels can be controlled individually from the corresponding channel control unit.

OUTPUT 2

wie Output 1 mit folgenden Ausnahmen:

SYNC/INP

entspricht SYNC bei Output 1

SYNC/-

Wiedergabesignal ab Aufnahmekopf in Play;
Mute in Record auf dem Ausgang

OUTPUT 2

same as output 1 with the following exceptions:

SYNC/INP

corresponds to SYNC with output 1

SYNC/-

Reproduce signal from recording head in play mode;
the output is muted in recording mode

2.5.3FernsteuerungenAUDIO FERNSTEUERUNG

Falls auf dem Master Panel die Taste Remote Control AUDIO gedrückt ist, können alle Audiokanäle inklusive Masterfunktionen von der Audiokanal-fernsteuerung aus bedient werden. Der einzige Unterschied in der Bedienung gegenüber der Maschine ist, dass die Wiedergabe ab Repro-Kopf auf Output 1 nicht individuell angewählt werden kann, auch wenn der Master Output 1 auf IND CTRL steht.

2.5.3Remote ControlsAUDIO REMOTE CONTROL

When the remote control button AUDIO is pressed on the master panel, all audio channels, including the master functions, can be controlled remotely from the audio channel remote control. In comparison to local operation, the only difference is that reproduce cannot be selected individually for output 1 even if master output 1 is in the IND CTRL position.

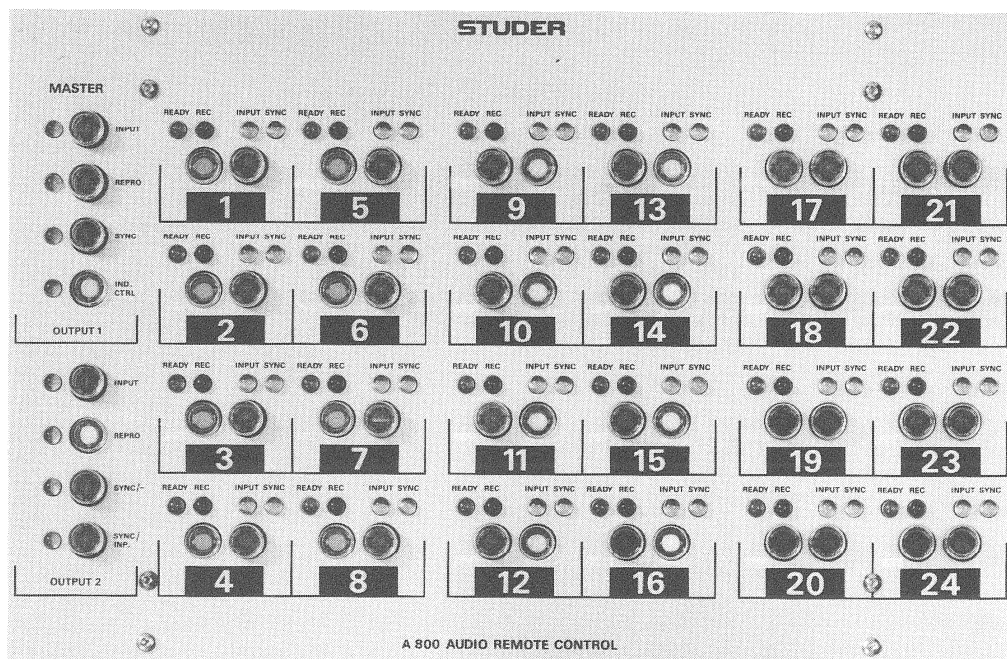


Fig. 2.14

VARI SPEED

Ist auf dem Master Panel die Taste Remote Control TAPE DECK gedrückt, so kann die Variation der Capstangeschwindigkeit von der Fernbedienung aus vorgenommen werden. Die Funktionen sind identisch mit denjenigen auf der Maschine.

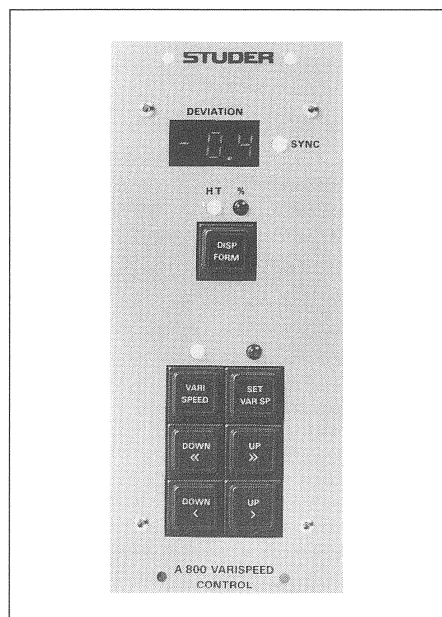


Fig. 2.15

VARI SPEED

When the remote control button TAPE DECK is pressed on the master panel, the variable capstan speed can be operated from the remote control. The functions are identical to those available with local control.

CODE KANAL FERNSTEUERUNG

Wenn auf der Maschine die Tasten Remote Control CODE CHANNEL sowie CODE CH ACTIVE gedrückt sind, kann der Code Kanal von der Fernbedienung aus gesteuert werden. Die Funktionen sind identisch mit denjenigen auf der Maschine.

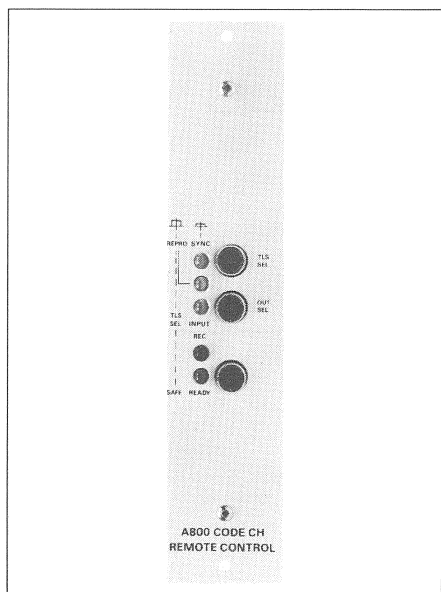


Fig. 2.16

CODE CHANNEL REMOTE CONTROL

When the remote control button CODE CHANNEL and the CODE CH ACTIVE button on the master panel are pressed, the code channel can be operated from the remote control. The functions are identical to those available with local control.

2.6 ERKLÄRUNG DER VERDRÄHTUNGSLISTEN UND SIGNALNAMEN

2.6.1 Verdrahtungslisten

Bei Geräten mit umfangreicher Elektronik sind Verdrahtungsschaltbilder unübersichtlich und geben Anlass zu Fehlinterpretationen. Deshalb wurde hier die zuverlässigere Methode mit Computerlisten gewählt. Diese informieren lückenlos über jede Verbindung innerhalb der Laufwerk- und Audioelektronik.

Zur besseren Übersicht sind die ganze Laufwerksteuerung und der Audioteil in Gruppen (GR) aufgeteilt. Die einzelnen Gruppen bestehen aus Elementen (EL), die eine bestimmte Anzahl von Anschlusspunkten (PT) aufweisen.

Die Signale tragen Bezeichnungen, die aus verschiedenen Abkürzungen zusammengesetzt sind, welche mit ein wenig Übung die jeweilige Funktion erkennen lassen. Eine detaillierte Auflistung aller Laufwerk- und Audiosignale findet sich in Abschnitt 2.6.2.

Werden zu bestimmten Signalnamen die zugehörigen Verbindungen gesucht, so gibt die SIGNAL WIRE LIST Auskunft.

Ist hingegen die Gruppenbezeichnung oder -nummer bekannt, können die ankommenden oder wegführenden Signale anhand der LOCATION PIN LIST identifiziert werden.

Beide Listen sind nach verschiedenen Begriffen geordnet, die nachstehend erklärt werden.

SIGNAL WIRE LIST

***** STUDER * SIGNAL WIRE LIST * 82/06/18 * 12:03 * PAGE 37 *															
TAPE RECORDER ***STUDER A800*** AUDIO SECTION 80/01/15															

SIG. NAME

Name des Signals, alphabetisch geordnet, (ein Verzeichnis aller Audio- und Laufwerksignale befindet sich in Abschnitt 2.6.2).

2.6 EXPLANATION OF WIRING LISTS AND SIGNAL NAMES

2.6.1 Wiring Lists

It is impractical to design wiring diagrams for equipment containing extensive electronic circuitry. The cluttered diagrams could lead to misinterpretations. We have, therefore, opted for the more reliable computer-generated wiring lists which give complete data on all the interconnections within the entire electronics.

The tape transport control and the audio section have been broken into various assemblies or component groups (GR) to improve readability. The individual component groups in turn are coded as elements (EL) and points (PT).

In addition, all signals carry acronyms composed of various abbreviations so that their functions can easily be recognized with some routine. A detailed listing of all tape deck and audio signals follows in section 2.6.2.

If you know a signal name and you are looking for the adequate connections please, consult the SIGNAL WIRE LIST.

If you know the number of the component group, and you want to find a signal name, the LOCATION PIN LIST will help you.

Both types of lists are subdivided into several headings which are explained subsequently.

SIGNAL WIRE LIST

***** STUDER * SIGNAL WIRE LIST * 82/06/18 * 12:03 * PAGE 37 *																
TAPES RECORDER ***STUDER A800*** AUDIO SECTION 80/01/15																
SIG. NAME		COLOR	TYPE	GR	EL	PT	S	DESCRIPTION OF ELEMENT								
(CONT.)		3	R	75	01	54		CONN. CONTROL BASIS UNITS								J01
				75	04	54		CONN. REMOTE CONTROL								J04
* 5.0 -Z				90	01	328		REPRODUCE AMP. CH XY								P01
				91	01	328		SYNC. AMP. CHXY								P01
				92	01	328		RECORD AMP. CH XY								P01
				93	01	328		HF DRIVER CH. XY								P01

SIG. NAME

Signal names in alphabetical order (you find a list of all audio- and tape deck signals in section 2.6.2.).

COLOR

Drahtfarbe gemäss Widerstandsfarbcodes:

COLOR

Color of the wire according to the resistor color code:

- 0 = schwarz

1 = braun

2 = rot

3 = orange

4 = gelb

5 = grün

6 = blau

7 = violett

8 = grau

9 = weiss
- 0 = black

1 = brown

2 = red

3 = orange

4 = yellow

5 = green

6 = blue

7 = violet

8 = grey

9 = white

TYPE		TYPE	
TYPE	BEZEICHNUNG	DESCRIPTION	PART NO.
A	Stecker Typ D, Crimp:	Connector, D-type, crimp:	
AA	Kontaktstift, für dünne Litzen	contact pin, for thin stranded wires	54.02.0451
B	Kontaktstift, für dicke Litzen	contact pin, for heavy stranded wires	54.02.0455
BB	Kontaktbuchse, für dünne Litzen	contact socket, for thin stranded wires	54.02.0450
	Kontaktbuchse, für dicke Litzen	contact socket, for heavy stranded wires	54.02.0454
C	CIS-Stecker:	CIS connector:	
D	Kontaktbuchse	contact socket	54.01.0402
	Kontaktstift	contact pin	54.01.0401
F	MOLEX-Stecker:	MOLEX connector:	
FF	Kontaktbuchse, für dünne Litzen	contact socket, for thin stranded wires	54.02.0412
	Kontaktbuchse, für dicke Litzen	contact socket, for heavy stranded wires	54.02.0413
G	Lötstift	Solder hook	29.21.6002
H	Litze, Draht, verzinkt (6 mm)	Wire, stranded wire, tinned (6 mm)	–
I	Stecker, Typ D, Crimp, Kontaktstift	Connector, D-type, crimp, contact pin	54.02.1112
JM	Flachstecker (AMP, FASTON), 0,8 x 6,3 mm:	Flat connector (AMP, FASTON), 0.8 x 6.3 mm:	
J	Steckerhülse, Crimp, für dünne Litzen	contact, female, crimp, for thin stranded wires	54.02.0337
JJ	Steckerhülse, Crimp, für dicke Litzen	contact, female, crimp, for heavy stranded wires	54.02.0332
	Steckerhülse, Crimp, für sehr dicke Litzen	contact, female, crimp, for very heavy stranded wires	54.02.0338
K	8 mm abisoliert, 1 mm verzinkt	8 mm stripped, 1 mm tinned	–
L	Litze, Draht, verzinkt (4 mm)	Wire, stranded wire, tinned (4 mm)	–
M	Kontaktstift (MOLEX), für dünne Litzen	contact pin (MOLEX), for thin stranded wires	54.02.0411
MM	Kontaktstift (MOLEX), für dicke Litzen	contact pin (MOLEX), for heavy stranded wires	54.02.0410
MY	AMP-Flachstecker (Zunge)	AMP flat connector (blade)	54.02.0344
N	CIS-Stecker, Kontaktstift	CIS connector, contact pin	54.01.0225
O	Kontaktfeder zu Europakartenstecker	Contact spring to EURO card connector strip	54.01.0376
P	Print-Federleiste:	P.c. board contact strip:	
PP	Kontaktfeder, für dünne Litzen	contact spring, for thin stranded wires	54.06.4512
	Kontaktfeder, für dicke Litzen	contact spring, for heavy stranded wires	54.06.4510
Q	Buchsenleiste, Kontaktbuchse	Socket strip, contact socket	54.01.0451
R	Stecker, Typ D, Crimp, Kontaktbuchse	Connector, D-type, crimp, contact socket	54.02.1111
S	4 mm abisoliert, verzinkt	4 mm stripped, tinned	–
T	TERMI POINT Steckkontakt auf Wire-Wrap-Stift	TERMI-POINT wire-wrap pin for plug connection	–
U	Rast-Lötkontakt, Crimp	Detent-spring solder contact, crimp	54.03.0201
UU	Rast-Lötkontakt, Crimp	detent-spring solder contact, crimp	54.34.6002
V	Steckerhülse für dicke Litzen	Contact, female, for heavy stranded wires	54.02.0432
VV	Steckerhülse für dünne Litzen	contact, female, for thin stranded wires	54.02.0474
W	Wrappen	To wrap	–
X	Flachstecker, (AMP, FASTON) 0,5 x 2,8 mm:	Flat connector (AMP, FASTON) 0.5 x 2.8 mm:	
XX	Steckerhülse, Crimp, für dünne Litzen	contact, female, crimp, for thin stranded wires	54.02.0325
	Steckerhülse, Crimp, für dicke Litzen	contact, female, crimp, for heavy stranded wires	54.02.0329
Y	Flachstecker, (AMP, FASTON) 0,8 x 2,8 mm:	Flat connector (AMP, FASTON) 0.8 x 2.8 mm:	
YY	Steckerhülse, Crimp, für dünne Litzen	contact, female, crimp, for thin stranded wires	54.02.0326
	Steckerhülse, Crimp, für dicke Litzen	contact, female, crimp, for heavy stranded wires	54.02.0327
Z	Nicht verzinkt	Not tinned	–

GR = GRUPPE

Die A800 ist in mehrere Gruppen unterteilt. Als Gruppen gelten Printkarten, Einschübe oder ein Rack.

GR = GROUP

The A800 is subdivided into several groups. Groups are PCBs, modules or a rack.

EL = ELEMENT

Gruppen, die über mehrere Einheiten verfügen, sind in Elemente gegliedert.

EL = ELEMENT

Groups which consist of various modules, are subdivided into elements.

PT = PUNKT

Auf den Elementen sind die Anschlusspunkte (PT) die Träger der elektrischen Verbindung.

PT = POINT

The elements contain the connecting points (PT).

DESCRIPTION OF ELEMENT
Bezeichnung des Bauteils, zu welchem
der genannte Anschlusspunkt gehört.

DESCRIPTION OF ELEMENT
Description of the element, the connec-
tion point belongs to.

LOCATION PIN LIST

LOCATION PIN LIST

***** * S T U D E R * L O C A T I O N P I N L I S T * 82/06/18 * 12:03 * P A G E 2 * ***** TAPE RECORDER ***STUDER A800*** AUDIO SECTION 80/01/15									
GR: 52 1.180.653.00 PREAMPLIFIER UNIT *****					GP: 52 (CONTINUATION) PREAMPLIFIER UNIT *****				
EL: 01 CONN. REP. HEAD CH01-16 J01					EL: 02 (CONTINUATION)				
TYPE PT LV SIG.NAME COLOR F X Y					TYPE PT LV SIG.NAME COLOR F X Y				
R 01 0 ANREPH02 2					P 03 0 ANPEPH21 5				
R 02 0 ANREPL02 0					R 04 0 ANPEPL21 0				
R 03 0 ANREPH05 5					R 05 0 ANPEPH24 8				
R 04 0 ANREPL05 0					P 06 0 ANPEPL24 0				
R 05 0 ANREPH08 8					R 07 0 ANPEPH27 3				
R 06 0 ANREPL08 0					P 08 0 ANPEPL27 0				
R 07 0 ANREPH11 3					R 09 0 ANPEPH30 6				
R 08 0 ANREPL11 0					R 10 0 ANPEPL30 0				
					EL: 03 (CONTINUATION)				
					TYPE PT LV SIG.NAME COLOR F X Y				
					R 05 0 ANRECH08 0				
					R 06 0 ANRECL08 6				
					R 07 0 ANRECH11 0				
					R 08 0 ANRECL11 6				
					P 09 0 ANRECH14 0				
					R 10 0 ANRECL14 6				
					11 0				
					12 0				

TYPE
Anschlussstyp (siehe Anschlussstyp bei
der Signal Wire List).

PT = PUNKT
Nummer des Anschlusspunktes

LEVEL
Verdrahtungsebene (vor allem bei Wrap-
verbindungen). Verbindungen, welche
nebst der Nummer ein Spezialzeichen
tragen, wurden nicht vom Wrapautomaten
verdrahtet, sondern spezifisch für die
vorliegende Version angebracht.

SIG. NAME
Signalname

COLOR
Drahtfarbe gemäss Widerstandsfarbcode.

TYPE
Type of connector (see Signal Wire
List).

PT = POINT
Number of the connection point

LEVEL
Wiring level (mainly for wrap connec-
tions). Connections which contain a
special letter additionally have not
been wrapped by the automatical wrap-
ping machine. They are provided specif-
ically for the present version.

SIG. NAME
Name of the signal

COLOR
Color of the wire according to the res-
istor color code.

2.6.2

SIGNAL-BESCHRIEB A800 LAUFWERKSIGNAL DESCRIPTION A800 TAPE DECK

Signalname/ Signal name	Funktion	Function	Type of signal	Low active	High active	Level
0-M1/2	Masse Sp.Motor M1 und M2	Ground Sp.Motor M1 and M2				
0-SWREG	Masse Switching Regulator	Ground Switching Regulator				
0-YAC1	Null für die Abtastköpfe	Ground Tachoheads				
0-YAC2	Null für die Abtastköpfe	Ground Tachoheads				
+ 0.0	Null	Ground				
+ 5.0	Speisespannung	Supply voltage	Stab.			+ 5.2V
+DL-PRSW	Speisespannung für LED DCQ 10 im Power supply für spooling motors	Supply voltage for LED DCQ 10 (Power Supply for Sp. Motors)				
+R-TT1	Anschlüsse des Potentio- meters in der linken Bandwaage	Connections to tape tension sensor potentiometer left				0...1,5V
-R-TT1	Anschlüsse des Potentio- meters in der linken Bandwaage	Connections to tape tension sensor potentiometer left				0...1,5V
R-TT1	Anschlüsse des Potentio- meters in der linken Bandwaage	Connections to tape tension sensor potentiometer left				0...1,5V
+R-TT2	Anschlüsse des Potentio- meters in der rechten Bandwaage	Connections to tape tension sensor potentiometer right				0...1,5V
-R-TT2	Anschlüsse des Potentio- meters in der rechten Bandwaage	Connections to tape tension sensor potentiometer right				0...1,5V
R-TT1	Anschlüsse des Potentio- meters in der rechten Bandwaage	Connections to tape tension sensor potentiometer right				0...1,5V
+ 12.0	Speisespannung	Supply voltage	Stab.			+ 12V
+ 22-M1	Pos. Speisespannung für Abwickelmotor	Pos. Supply voltage for supply motor	Unstab.			+ 27V
+ 22-M2	Pos. Speisespannung für Aufwickelmotor	Pos. Supply voltage for take up motor	Unstab.			+ 27V
+ 24.0	Speisespannung für Lampen und Magnete	Supply voltage for bulbs and solenoids	Stab.			+ 24V
+ 24.0 TLS	+ 24.0 zu TLS	+ 24.0 to TLS				+ 24V
+ 24 SR	Eingangsspannung für Switching Regulator	Supply voltage for Switching Regulator	Unstab.			+ 24V
+ 31.0-1	Eingangsspannung für 24V Stabilisator	Supply voltage for 24V Stabilizer	Unstab.			+ 30V
+ 31.0-2	Eingangsspannung für 24V Stabilizer	Supply voltage for 24V Stabilizer	Unstab.			+ 30V
- 5.0	Speisespannung	Supply voltage	Stab.			- 5V
-DL-PRSW	Schaltet die Netzspannung für Sp.Motor Power Supply ein	Switches the Sp.Motor Power Supply on	Opencoll.	x		24V

Signalname/ Signal name	Funktion	Function	Type of signal	Low active	High active	Level
+RP-TRSP	Speisespannung für den Fotowiderstand	Supply voltage for the photoresistor				
-RP-TRSP	beim Transparentband aktiv	Transparenttape active	Photoresistor	x		1,4V
- 12.0	Speisespannung	Supply voltage	Stabi			-12V
- 18.0	Eingangsspannung für den -12V Stabilizer	Supply voltage for -12V Stabilizer	Unstab.			18V
- 22-M1/2	Neg. Speisespannung für beide Wickelmotoren	Neg. Supply voltage for Spooling Motors	Unstab.			-27V
ALOC-ACT	Autolocator Aktiv	Autolocator active	Switch	x		0V
AUDCMINH	Audio Befehle gesperrt	Audio command inhibit	Opencoll.	x		24V
B-ADDLOC	Lampe: ADDRESS LOC	Bulb: ADDRESS LOC	Opencoll.	x		24V
B-ADDR	Lampe: Display auf ADDRESS geschaltet	Bulb: Display switched to ADDRESS	Opencoll.	x		24V
B-CUT	EDIT-Lampe	Bulb: EDIT	Opencoll.	x		24V
B-FAD	Aktivität des FADERSTARTS	FADERSTART active	Opencoll.	x		24V
B-FORW	Lampe: FORWARD	Bulb: FORWARD	Opencoll.	x		24V
B-INDIC	24V Lampenspeisung	+24V supply voltage for bulbs	Opencoll.		x	24V
B-LOCAT	Aktivität des Autolocators	Bulb: Autolocator active	Opencoll.	x		24V
B-PERCT	Prozent/Halbtonumschaltung	Bulb: % / HT	Opencoll.	x		24V
B-REC	Lampe: RECORD	Bulb: RECORD	Opencoll.	x		24V
B-REPR	Lampe: REPRODUCE	Bulb: REPRODUCE	Opencoll.	x		24V
B-REW	Lampe: REWIND	Bulb: REWIND	Opencoll.	x		24V
B-SETADD	Lampe: SET ADDRESS	Bulb: SET ADDRESS	Opencoll.	x		24V
B-SETTMR	Lampe: SET TIMER	Bulb: SET TIMER	Opencoll.	x		24V
B-SETVSP	Lampe: SET VARISPEED	Bulb: SET VARISPEED	Opencoll.	x		24V
B-STOP	Lampe: STOP	Bulb: STOP	Opencoll.	x		24V
B-SYNC	Lampe: Capstan synchron	Bulb: Capstan locked on	Opencoll.	x		24V
B-TRSP	Speisespannung für die Lampe im Transparentband-Schalter	Supply voltage the bulb in the tape end switch	R= 10 Ohm			- 5V
B-VARISP	Lampe: VARISPEED	Bulb: VARISPEED	Opencoll.	x		24V
B-ZLOC	Lampe: ZERO LOC	Bulb: ZERO LOC	Opencoll.	x		24V
CD-RES 1,2,7,8	Reserve Ausgänge N.C	Reserve Outputs N.C.				
C-M3-2	Anschluss des Phasenschieberkondensators am Capstanmotor	Connection to the phaseshift capacitor (Capstanmotor)	AC			Variable
CRAZCAN	Auto Input	Auto Input	Switch	x		
CUR-M1-1	Motorstromproportionale Spannung	Voltage proportional to the motor current M1	DC			± 0-0.8V

Signalname/ Signal name	Funktion	Function	Type of signal	Low active	High active	Level
CUR-M2-1	Motorstromproportionale Spannung	Voltage proportional to the motor current M2	DC			+ 0-0.8V
CUR-M1-0	Masse	Ground				
CUR-M2-0	Masse	Ground				
DEL-ACT	Delay active (Delay Ctrl. plugged in)	Delay active (Delay Ctrl. plugged in)	Switch	x		
DIDELINH	Drop in delay inhibit	Drop in delay inhibit	Switch	x		
DRVENB	Driver enable N.C.	Driver enable N.C.	TTL	x		
F-M3	Capstanmotorspeisespannung	Supply voltage for capstan-motor	AC			130V
FAD-1	Fader-Start Eingänge	Faderstart inputs	AC or DC			24V
FAD-2	Fader-Start Eingänge	Faderstart inputs	AC or DC			24V
FQ 3200	Ausgang des Frequenz Synthesizer	Output of Frequency Synthesizer	Squarewave TTL			5V
F 6400 INT	Interne Capstan Referenzfrequenz	Internal Capstan reference frequency	TTL			5V
GND-MAIN	Schutzerdleitung	Ground				
IA 00 bis 15	Inverse MPU-Adressbus	Inverse MPU-Adressbus	TTL-Threestate			
ICK 2 UNGT	Inverse clock 2 ungated	Inverse clock 2 ungated	TTL			
IDATA 0 bis 7	Inverse MPU-Datenbus	Inverse MPU-Datenbus	Threestate			
IIRQ	Inverse Interrupt Request	Inverse Interrupt Request	TTL	x		
IRSETMPU	Inverse MPU-Reset	Inverse MPU-Reset	TTL	x		
IRSETPPH	Inverse Reset Peripherie	Inverse Reset Peripherie	Threestate	x		
IVMA	Invers valid memory address	Invers valid memory address	Threestate	x		
IVMA*CK2	IVMA mit Clock 2 verknüpft	IVMA gated with CK 2	Threestate	x		
IWRITE	Write enable from MPU	Write enable from MPU	Threestate	x		
K-BLIFT	Bremsmagnet links und rechts	Brake lift solenoid left and right	Opencoll.	x		24V
K-BRAKE	N.C.	N.C.	Opencoll.	x		24V
K-CUT 1/2	CUTTER-Magnet aktiv	CUTTER Solenoid active	Opencoll.	x		24V
K-MOTENB	Wickelmotoren ansteuerbar	Spooling-motors enable	Opencoll.	x		24V
K-PRESS	Andruckmagnet	PRESSURE Solenoid	Opencoll.	x		24V
K-TT	Magnete in den Bandzugwaagen	Solenoids built in into tape tension sensors	Opencoll.	x		24V
K-TT1/2	Verbindung zwischen den beiden Bandzugwaage-Magneten	Connection between the two tape tension sensor solenoids				
LINE-L	Phase vor dem Netzschalter	Line before power switch	AC			
LINE-N	Nulleiter vor dem Netzschalter	Neutral before power switch	AC			

Signallampe/ Signal name	Funktion	Function	Type of signal	Low active	High active	Level
LOC.ENB	aktiviert lokale Bedienungselemente	Enables command switches local	Opencoll.	x		24V
MST-ACT	Print 1.228.434 eingesteckt Master aktiv	P.C.Board 1.228.434 plugged in Master active	Switch	x		5V
M 3-1	Capstanmotorspannung gemessen gegen T-M3	Motor voltage controlled by capstan servo, measured to T-M3	AC			Variable 0...130V
QP-ADTR	N.C.	N.C.				0V
QP-DIR 1	Signal vom Move and direction sensor 1	Signal from Move and direction sensor 1	Squarewave			5 Vpp
QP-DIR 2	Signal vom Move and direction sensor 2	Signal from Move and direction sensor 2	Squarewave			5 Vpp
QPWR3-B,C,E	Leistungstransistor für Capstanmotor	Power transistor for capstan-motor				
QPNR4-B,C,E	Leistungstransistor für -12V Speisung	Power transistor for -12V supply				
QPWR5-B,C,E	Leistungstransistor für -5V Speisung	Power transistor for -5V supply				
QPWR6-B,C,E	Leistungstransistor für +12V Speisung	Power transistor for +12V supply				
QPWR7-B,C,E	Leistungstransistor für +24V Speisung	Power transistor for +24V supply				
R-CUT 1	Signal vom CUTTER Potentiometer zu Wickelmotorsteuerung	Signal from CUTTER potentiometer to Sp. Motor Ctrl.	DC			
R-CUT 2	Signal vom CUTTER Potentiometer zu Wickelmotorsteuerung	Signal from CUTTER potentiometer to Sp. Motor Ctrl.	DC			
R-TT1	Pos. Speisung für das linke Bandwaage Potentiometer	Pos. supply Voltage for the left tape tension sensor	DC			
R-TT2	Pos. Speisung für das rechte Bandwaage Potentiometer	Pos. supply Voltage for the right tape tension sensor	DC			
REM.ENB	Freigabe der Fernsteuerung	Remote Control Enable	Opencoll.	x		24V
S-ADDLOC	Befehl: ADDRESS LOCAT	Command: ADDRESS LOCAT	Switch	x		0V
S-CODE	Befehl: CODE CH Aktiv	Command: CODE CH Active	Switch	x		0V
S-CUT	Befehl: EDITING	Command: EDITING	Switch	x		0V
S-CUTAUT	Befehl: CUTTER Autom. Drucktaste gedrückt	Command: CUTTER Autom. Push-Button depressed	Switch	x		
S-CUTINH	Befehl: CUTTER INHIBIT Drucktaste gelöst	Command: CUTTER INHIBIT Push-Button released	Switch	x		0V
S-DWFST	Befehl: DOWN FAST	Command: DOWN FAST	Switch	x		0V
S-DWNSLW	Befehl: DOWN SLOW	Command: DOWN SLOW	Switch	x		
S-FORW	Befehl: FORWARD	Command: FORWARD	Switch			
S-KCUT	Befehl: EDIT Magnet aktiv	Command: EDIT Solenoid active	Switch Remote Ctrl.	x		

Signalname/ Signal name	Funktion	Function	Type of signal	Low active	High active	Level
S-LID	Schalter: Kopfabschirm- klappe zu	Headshieldcover closed	Switch	x		0V
S-LINE-L	Phase nach dem Netzschalter	Line after Power switch				100-240V
S-LINE-N	Nulleiter nach dem Netz- schalter	Neutral after Power switch				
S-MUTE-R	Befehl: Audio Mute	Command: Audio Mute	Switch Remote Ctrl.	x		0V
S-REC	Befehl: RECORD	Command: RECORD	Switch	x		0V
S-RECOFF	Befehl: RECORD OFF (Master safe)	Command: RECORD OFF (Master safe)	Switch	x		0V
S-REFSEL	Capstan Referenzfrequenz- wahl (Low=Ext)	Capstan reference frequency select (Low=Ext)	Switch Remote Ctrl.	x		0V
S-REM-TD	Befehl: REM. CONTROL Aktiv	Command: REM. CONTROL Active	Switch	x		0V
S-REPR	Befehl: REPRODUCE	Command: REPRODUCE	Switch	x		0V
S-RESET	Befehl: TIMER RESET	Command: TIMER RESET	Switch	x		0V
S-REW	Befehl: REWIND	Command: REWIND	Switch	x		0V
S-SETADD	Befehl: SET ADDRESS	Command: SET ADDRESS	Switch	x		0V
S-SETTMR	Befehl: SET TIMER	Command: SET TIMER	Switch	x		0V
S-SETVSP	Befehl: SET VARIOSPEED	Command: SET VARIOSPEED	Switch	x		0V
S-STOP	Befehl: STOP	Command: STOP	Switch	x		0V
S-UPFST	Befehl: UP FAST	Command: UP FAST	Switch	x		0V
S-UPSLW	Befehl: UP SLOW	Command: UP SLOW	Switch	x		0V
S-VARACT	VARIOSPEED CTL.Active	VARIOSPEE CTL. Active	Switch	x		0V
S-VARISP	Befehl: VARIOSPEED	Command: VARIOSPEED	Switch	x		0V
S-ZLOC	Befehl: ZERO LOCAT	Command: ZERO LOCAT	Switch	x		
SH-CUT	Endposition des CUTTER- magneten	End position of CUTTER Solenoid	Switch	x		24V
SH-PRESS	Endposition des Pressure- roller	End position of Pressure roller	Switch	x		24V
T-IDIRMV	Move Signal direction (forward)	Move Signal direction (forward)	TTL	x		5V
T-MVCLK1	Move Signal (f= 32 Hz at 30 ips)	Move Signal (f= 32 Hz at 30 ips)	TTL			5V
T-MVCLK2	Move Signal (f= 64 Hz at 30 ips)	Move Signal (f= 64 Hz at 30 ips)	TTL			5V
T-REFSEL	Capstan Referenzfrequenz- wahl (Low = Ext.)	Capstan reference frequency select (Low = Ext.)	TTL	x		5V
T-M3	Capstanmotor Speisesp.	Capstanmotor supply voltage	AC			130VAC
TD-A0...A2	Tape deck Address bus	Tape deck Address bus	TTL	x		
TD-D0...D7	Tape deck Data bus	Tape deck Data bus	Threestate	x		
TD-ENB0	Schreib-Befehl Tape Deck	Write command for tape deck	TTL	x		
TD-SEL0	Lese-Befehl Tape Deck	Read command tape deck	TTL	x		

Signalname/ Signal name	Funktion	Function	Type of signal	Low active	High active	Level
TLS-ACT	Tape lock system active	Tape lock system active	Switch	x		0V
TT1-ACT	Bandzugwaage links aktiv	Tape tension sensor left active	Diode	x		-0.7V
TT2-ACT	Bandzugwaage rechts aktiv	Tape tension sensor right active	Diode	x		-0.7V
Y-CAPREF	Capstan-Referenzfrequenz	Capstan reference frequency	Squarewave			5Vpp
Y-CM1-1	Steuerspannung für Abwickel- motor	Control voltage for supply motor	DC variable			+ 10V
Y-CM2-1	Steuerspannung für Aufwik- kelmotor	Control voltage for take up motor	DC variable			+ 10V
Y-CM1-0	Masse	Ground				
Y-CM2-0	Masse	Ground				
Y-DSP-A...D	Display Data Bus (Digit select)	Display Data Bus (Digit select)	TTL	x		5V
Y-DSP-D0..D3	Display Data Bus (Segment select)	Display Data Bus (Segment select)	TTL	x		5V
Y-DSP-E...H	Display Data Bus (Digit se- lect for Auto Locator)	Display Data Bus (Digit se- lect for Auto Locator)	TTL	x		5V
Y-DSR-A...D	Display Segment Data Bus (Remote Ctrl.)	Display Segment Data Bus (Remote Ctrl.)	TTL			
Y-DSR-D0..D3	Display Data Bus (Remote Ctrl.)	Display Data Bus (Remote Ctrl.)	TTL			
Y-IDIR-R	Move Signal direction Low= Forward, High= Rewind	Move Signal direction Low= Forward, High= Rewind	Opencoll. Remote Ctrl.	x		
Y-HIGH	Capstangeschw. schnell	Capstan speed high	Switch	x		0V
Y-IMOVE	Bandbewegungssignal	Move signal	Opencoll.	x		24V
Y-KEYB-1	3 Bit Auto Locator Key- board Bus	Auto Locator keyboard Bus 3 Bit	Threestate			
Y-KEYB-2	3 Bit Auto Locator Key- board Bus	Auto Locator keyboard Bus 3 Bit	Threestate			
Y-KEYB-3	3 Bit Auto Locator Key- board Bus	Auto Locator keyboard Bus 3 Bus	Threestate			
Y-LOW	Capstangeschw. langsam	Capstan speed low	Switch	x		0V
Y-MUTE	Mute for Audio Outputs	Mute for Audio Outputs	Switch	x		
Y-MVCLK1	Move Signal (f= 32 Hz at 30 ips)	Move Signal (f= 32 Hz at 30 ips)	Opencoll. Remote Ctrl.	x		
Y-MVCLK2	Move Signal (f= 64 Hz at 30 ips)	Move Signal (f= 64 Hz at 30 ips)	Opencoll.	x		
Y-M1	Sp.Motor Power Unit Ausgangs- spannung für Motor M1	Output Voltage of Sp.Motor Power Unit for Motor M1	DC variable			0-30V
Y-M2	Sp.Motor Power Unit Ausgangs- spannung für Motor M2	Output Voltage of Sp.Motor Power Unit for Motor M2	DC variable			0-30V
YPS-REC	Pulse if Rec-button is depressed	Puls wenn Rec-Taste gedrückt wird.	TTL			
Y-PRSFL	Low if one of the supply voltages is missing	Low wenn eine der Speise- spannungen fehlt.		x		

Signalname/ Signal name	Funktion	Function	Type of signal	active		Level
				Low	High	
Y-REC	Record Signal	Record signal	Opencoll.	x		
Y-REDSP	Reduktion der Umspulgeschw. ungefähr 3 Min. vor Band- ende	Speed Reduction approx. 3 Min. before tape end	Opencoll.	x		24V
Y-REFEXT	Externe Capstan Referenz- frequenz	External Capstan reference frequency	TTL Remote Ctrl.			
Y-SYNC	Capstan synchron	Capstan looked on	Opencoll.	x		5V
Y-TACHD	Capstanmotortachofrequenz	Tachofrequency of Capstan- motor	Squarewave			5Vpp
Y-TPPRCT	Bandschutzschaltung → Power off (Speisespannung fehlt oder Sp.Mot. Leistungstrans. defekt)	Tape protection → Power off (supply Voltage missing or transistor faulty)	Opencoll.	x		24V
Y-TRSP	Lichtschanke	Tape end switch	Transistor	x		5V
Y-TRSP-R	Lichtschanke Low= Kein Band	Tape end switch Low= No tape	Opencoll. Remote Ctrl.	x		
YAC1-M3	Tacho Signal vom 1.Abtast- kopf	Tacho signal from head 1	AC			
YAC2-M3	Tacho Signal vom 2.Abtast- kopf	Tacho signal from head 2	AC			
Y2-INIT	Reset beim Einschalten für 8-Bit Register	Power on reset for 8-Bit Registers	TTL	x		
Y2-IRSTD	Reset von der MPU für 8-Bit Register	Reset from MPU for 8-Bit Registers	TTL	x		
Y2-MOVED	Capstangeschw. ist grösser als Bandgeschw.	Capstan speed is higher than tape speed	TTL	x		
Y2-SEL-1	Select Signale für 8-Bit Buffers	Select signals for 8-Bit Buffers	TTL	x		5V
Y2-SEL-2	Select Signale für 8-Bit Buffers	Select signals for 8-Bit Buffers	TTL	x		5V
Y2-SEL-3	Select Signale für 8-Bit Buffers	Select signals for 8-Bit Buffers	TTL	x		5V
Y2-SEL-4	Select Signale für 8-Bit Buffers	Select signals for 8-Bit Buffers	TTL	x		5V
Y2-TTC1	Aktivieren des 8-Bit Registers von M1	Enable of 8-Bit Register for M1	TTL	x		5V
Y2-TTC2	Aktivieren des 8-Bit Registers von M2	Enable of 8-Bit Register for M2	TTL	x		5V
Y2-VSC1	Aktivieren des 8-Bit Reg. auf dem Variospeed Interface	Enable of 8-Bit Register on the Variospeed Interface Card	TTL	x		5V

2.6.3

SIGNAL-BESCHREIB DES AUDIOTEILESSIGNAL DESCRIPTION AUDIO SECTION

			Analog	Low-active	High-active	Level
+ 0.0	Laufwerk-Masse	Tape deck ground				
+ 15.0-(A,B,C,Z°)	Logic-Speisespannung Z,A,B,C-Etage	Logic supply voltage Z,A,B,C-Etage				+ 5V
+ 5.0-(A,B,C,Z°)	Audio-Speisespannung Z,A,B,C-Etage	Audio supply voltage Z,A,B,C-Etage				+ 15V
+ 24.0	Speisespannung Laufwerk	Tape deck supply voltage				+ 24V
+ 24.0 TLS	Speisespannung TLS	TLS supply voltage				+ 24V
- 15.0-(A,B,C,Z°)	Audio-Speisespannung Z,A,B,C-Etage	Audio supply voltage Z,A,B,C-Etage				- 15V
ACA 12-(A,B,C) ACB 12-(A,B,C)	Ader A } AC-Spannung für Beleuchtung Ader B } der VU-Meter Position "DIM" Z,A,B,C-Etage Position "bright"	Wire A } AC-voltage to light the Wire B } VU-Meters Position "DIM" Z,A,B,C-Etage Position "bright"				20V 24V
AN-IN1XY	Signal für Input-Schiene des Wieder- gabeverstärkers	Analog input signal to the repro-amp	x			- 6,5dBm*
AN-IN2XY	Signal für Input-Schiene des Sync- Verstärkers	Analog input signal to the sync- amp	x			- 6,5dBm*
AN-PAMXY	Signal nach Preamplifier Repro	Repro signal after preamplification	x			- 33 dBm*
AN-REPHY	Signal für Repro-Schiene des Sync- Verstärkers	Repro signal to the sync-amp	x			- 3 dBm*
AN-SYNXY	Signal für Sync-Schiene des Repro- Verstärkers	Sync signal to the repro-amp	x			- 3 dBm*
ANERACOH ANERACOL	High } Löshsignal für Codekanal Low } direkt am Löschkopf	High } Erase signal for the code Low } channel right before the erase head	x			
ANRCCODH ANRCCODL	High } Recordsignal für Codekanal Low } direkt am Aufnahmekopf	High } Record signal for the code Low } channel right before the record head	x			
ANRECHXY ANRECLXY	High } Recordsignal (oder Sync) Low } direkt von Record-Kopf	High } Record signal right after the Low } record head	x			
ANREPCOH ANREPCOL	High } Repro. Signal für Codekanal Low } direkt am Wiedergabekopf	High } Repro. signal for code channel Low } right before the repro head	x			
ANREPHY ANREPLXY	High } Signal direkt vom Repro- Low } Kopf	High } Repro signal right before the Low } repro head	x			
AUDCMINH	Audio Command Inhibit: Audio Bedienung wird von µP über- nommen, Local und Remote control nicht mehr aktiv.	Audio Command Inhibit: Audio switching is handled by µP. Local and remote ctrl not active.		x		

* 200 nWb/m, 4dBm, 0VU, 30ips

° on amplifier boards

			Analog	Low-active	High-active	Level
B-BDY-XY	Schaltsignal bei Record und Input	Switching signal for record and input		x		
B-RCD-XY	Record-Lampe leuchtet bei Kanal XY für Remote und Local	Record-lamp on channel XY is lit for remote and local		x		
B-REA-XY	Ready-Lampe leuchtet bei Kanal XY für Remote und Local	Ready-lamp on channel XY is lit for remote and local		x		
B-REHEAR	Rehears-Lampe leuchtet	Rehears-lamp is lit		x		
B-SPTERA	Spot-Erase Lampe leuchtet	Spot-erase lamp is lit		x		
B-SYNC-XY	Sync-Lampe leuchtet bei Kanal XY (Rem. und Loc.)	Sync lamp on channel XY is lit (Rem. and Loc.)		x		
CRAZAM	Auto Input nur bei Kanälen, die auf "Ready" stehen	Auto input for "ready" channels only		x		
CRAZCAN	Auto Input-Befehl (Signal) für Delay unit	Auto input-command (signal) for delay unit		x		
DEL-ACT	Aktiviert das Delay Programm, wenn die Karte "Delay Kontr." steckt.	Activates the delay program if PC-Board "Delay controller" is inserted.		x		
DIDELINH	Drop in Delay Inhibit: Maschine geht direkt in Record, Einstieg ist nicht verzögert- (Erase + Bias)	Machine goes in Record immediately, drop in is not delayed (Erase+Bias)	x			
FQ 3200	Capstan Referenz 3200 Hz	Capstan reference 3200 Hz	x			5V
GND	Chassis	Chassis		x		
HDSW 0	Breiter Kopfträger	} aktiviert das richtige Delay-Programm	Wide headblock	}	activates the corresponding delay program	
HDSW 1	mit Inline LK enger Kopfträger					
ICKB 0...3	Bias aktiv für Gruppe von 8 Kanälen	Bias active for group of 8 channels		x		
ICKB 0...3	Erase " " " " " "	Erase " " " " " "		x		
ICKI 0...3	Input " " " " " "	Input " " " " " "		x		
ISEL 0...3	Ready " " " " " "	Ready " " " " " "		x		
INA-XY	Ader A }	Sym. Input Signal des Record-Verstärkers	Wire A }	Sym. input signal of the amplifier		
INB-XY	Ader B }					
INSA-XY	Ader A }	Sym. Linien Eingangssignal	Wire A }	Sym. line input signal		
INSB-XY	Ader B }					
K-REC-XY	Befehl vom HF-Driver für das Record-Relais	Command of the HF-Driver for the record relais		x		
MAPRES 2	Reserve - Leitung zwischen Master-Panel und Laufwerk	Spare wire between master panel and tape deck				
MAPRES 3						

					Analog	Low-active	High-active	Level
OUTS1A XY OUTS1B XY	Ader A } Ader B }	Sym. Linien-Ausgänge Output 1	Wire A } Wire B }	Sym. line outputs Output 1	x x			
OUTS2A XY OUTS2B XY	Ader A } Ader B }	Sym. Linien-Ausgänge Output 2	Wire A } Wire B }	Sym. line outputs Output 2	x x			
OUT1A-XY OUT1B-XY	Ader A } Ader B }	Signal zu Primärseite des Ausgangstrafo out 1 (nicht symmetrisch)	Wire A } Wire B }	Signal to primary side of output transformer out 1 (asymmetric)	x x			
OUT 2A-XY OUT 2B-XY	Ader A } Ader B }	Signal zu Primärseite des Ausgangstrafo out 2 (nicht symmetrisch)	Wire A } Wire B }	Signal to primary side of output transformer out 2 (asymmetric)	x x			
S-CALIB	Signal für normierten Gain des Linienverstärkers (Out1 und Out2)		Signal for normalized gain of the line amplifier (Out1 and Out2)			x		
S-CCIR	Signal für Entzerrungumschaltung (- 15V $\hat{=}$ CCIR) (+ 15V $\hat{=}$ NAB) Siehe S - NAB!		Signal to switch over the equaliza- tion (- 15V $\hat{=}$ CCIR) (+ 15V $\hat{=}$ NAB) See S - NAB!			x		
S-CODE	Signal zum Umschalten der Relais im Kopfträger		Signal to switch over the relais in the headblock			x		
S-GAIN	Befehl zur Vergrößerung der Linien- verstärkung (+ 10 dB)		Signal to increase the gain of the line amplifier by 10 dB			x		
S-HEAD 16	Abschalten des Netzgerätes für Etagé C bei Verwendung von 16-Kanal Kopfträger		Switch off the power supply of channel 17...24 when using a 16 channel headblock			x		
S-IN-XY	Befehl: Input zu Output 1 durch- geschlauft		Command: Output 1 is set to input					
S-INDCTL	Befehl für individuelle Ansteuerung der Audio Kanäle		Command for individual control of the audio channels			x		
S-INM1	Input-Befehl: Alle Kanäle auf Out- put 1 (MASTER)		Input command: All channels to Output 1 (MASTER)			x		
S-INM1R	Input-Befehl: Alle Kanäle auf Output 1 (MASTER) für Remote- Ansteuerung		Input command: All channels to Output 1 (MASTER) for remote- control			x		
S-INM2	Input-Befehl: Alle Kanäle auf Out- put 2 (MASTER)		Input command: All channels to Output 2 (MASTER)			x		
S-INM2R	Input-Befehl: Alle Kanäle auf Output 2 (MASTER) für Remote- Ansteuerung		Input command: All channels to Output 2 (MASTER) for remote- control			x		
S-LOCIN	Signal für lokale Ansteuerung		Signal for local control			x		
S-MUTE	Mute Signal für "Mute nur im Umspulen"		Mute signal for mute in wind mode only			x		

			Analog	Low-active	High-active	Level
S-NAB	Signal für Entzerrungsumschaltung - 15V $\hat{=}$ NAB + 15V $\hat{=}$ CCIR	Signal for equalization switch over - 15V $\hat{=}$ NAB + 15V $\hat{=}$ CCIR		x		
S-REA-XY	Signal der Ready-Taste	Signal from the ready key		x		
S-RECOFF	Signal für Record-Sperre im Laufwerk	Signal for record lockout in the tape deck		x		
S-REM-TD	Signal für Fernsteuerung vom Laufwerk	Signal for remote control of the tape deck		x		
S-REMIN	Signal für Fernsteuerung von Audio	Signal for remote control of the audio section		x		
S-REP-XY	Befehl Reprod. zu Output 1	Command reprod. to Output 1		x		
S-REPM1	Output 1 aller Kanäle steht auf Reproduce (Master)	Output 1 of all channels is set to reproduce (master)		x		
S-REPM1R	Output 1 aller Kanäle steht auf Repro (Master, von Fernsteuerung aus)	Output 1 of all channels is set to repro (master, from remote control)		x		
S-REPM2	Output 2 aller Kanäle steht auf Reproduce (Master)	Output 2 of all channels is set to reproduce (master)		x		
S-REPM2R	Output 2 aller Kanäle steht auf Reproduce (Master, von Fernsteuerung aus)	Output 2 of all channels is set to reproduce (master, from remote control)		x		
S-SYNM1	Output 1 aller Kanäle steht auf Sync (Master)	Output 1 of all channels is set to sync (master)		x		
S-SYNM1R	Output 1 aller Kanäle steht auf Sync (Master, von Fernsteuerung aus)	Output 1 of all channels is set to sync (master, from remote control)		x		
S-SYNM2	Output 2 aller Kanäle steht auf Sync	Output 2 of all channels is set to sync		x		
S-SYNM2R	Output 2 aller Kanäle steht auf Sync (von Fernsteuerung aus)	Output 2 of all channels is set to sync (from remote control)		x		
SCREEN	Abschirmung Code Kanal	Screen				
SPOTERAS	Befehl: Spot Erase vom Masterpanel	Command: Spot erase from the master panel		x		
Y-BIAH XY Y-BIAL XY	High } Vormagnetisierungssignal für Low } Bias-Trafo	High } Bias-Signal Low }	x			
Y-Low	Signal für langsame Geschwindigkeit	Signal for slow speed selector		x		
Y-MOD1	nicht belegt	not used				

			Analog	Low-active	High-active	Level
Y-MUTE	Befehl von Taste, Laufwerk und TLS (Schiene) (6 Sek. nach Einschalten der Maschine wird das Mute-Signal gelöst)	Mute-signal from masterpanel, tape deck and TLS (6 seconds after switch on, the machine is demuted)		x		
Y-RCURXY	Mess-Signal zu Messpunkt: Biasstrom	Test-signal to test point: Bias current	x			
Y-REC	Record-Befehl von Laufwerk	Record command from tape deck		x		
Y-RECBXY	Bias-Befehl: von Delay Register zum HF-Driver	Bias command: from delay register to HF driver		x		
Y-RECDXY	Record-Befehl für Delay-Unit: Entsteht auf dem HF-Driver	Record command for delay unit: is generated on the HF driver		x		
Y-RECEXY	Erase-Befehl: Von Delay Register zum HF-Driver	Erase command: From delay register to HF driver		x		
Y-RECHXY Y-RECLXY	High } Eingang des Sync-Verstärkers Low } vom Record-Kopf	High } Input of the sync amplifier Low } from recordhead	x			
Y-RECIXY	Umschalten von Sync auf Input bei Out 1 und Out 2: vom Delay Register zum Repro- und Sync- Verstärker	Switch over from sync to input for Out 1 and Out 2: from delay register to repro- and sync amplifier		x		
Y-REHEAR	Befehl: Rehears	Command: Rehears		x		
Y-SPEEXY	abgeleitet von Y-Low. aktiv = langsame Geschwindigkeit	derived from Y-Low. active = slow speed		x		
Y-AC-BIAS (0 - BIAS)	Bias-Schiene	Bias rail	x			
Y-AC-ERAS (0 - ERAS)	Erase-Schiene	Erase rail	x			
YERAHXY YERHLXY	High } Löschkopfsignal Low }	High } Erasehead signal Low }	x			
YPS-REC	Puls Record: Signal vom Laufwerk löst zusammen mit Y-Rec und S-Rec den Record Vorgang aus.	Tape deck signal which activates recording together with Y-Rec and S-Rec.		x		
0.0 - (A,B,C,Z)	Audio-Masse Z (a) A,B,C - Etage	Audio ground Z (a) A,B,C - level				0V
0.0 - DIG (A,B,C,Z)	Logic-Masse Z (a) A,B,C - Etage	Logic ground Z (a) A,B,C - level				0V
0 - BIAS	Bias-Schiene (Masse)	Bias rail (ground)				0V
0 - ERAS	Erase-Schiene (Masse)	Erase rail (ground)				0V
0-PAM-XY	Masse: Preamp. Reprod.	Ground: Preamp. reprod.				0V

2.7 PFLEGEHINWEISE

Zur Reinigung des Tonbandgeräts wird das STUDER CLEANING SET im handlichen Koffer empfohlen. Es enthält 1 Flasche Tonkopfreiniger, 1 Flasche Eloxalreiniger, faserfreie Vliestücher, Hirschleder.

Best. Nr. 10.496.010.00 .

Tonkopfreiniger, Ersatzflasche
Best. Nr. 10.496.021.00
Eloxalreiniger, Ersatzflasche
Best. Nr. 10.496.025.00
Tonkopfreiniger, 1 l-Flasche
Best. Nr. 10.496.022.00
Eloxalreiniger, 1 l-Flasche
Best. Nr. 10.496.026.00

2.7 MAINTENANCE INSTRUCTIONS

To clean the tape recorder, the STUDER CLEANING SET in carrying case is recommended. It contains 1 bottle of soundhead cleaner, 1 bottle of Aluminite (Eloxal) cleaner, non-fluffing fleece cloth, deerskin.

Order No. 10.496.010.00 .

Soundhead cleaner, spare bottle
Order No. 10.496.021.00
Aluminite cleaner, spare bottle
Order No. 10.496.025.00
Soundhead cleaner, bottle of 1 l
Order No. 10.496.022.00
Aluminite cleaner, bottle of 1 l
Order No. 10.496.026.00

2.7.1 Capstan Motor

Die Achse darf nur mit einem feuchten Lappen gereinigt werden.

2.7.1 Capstan motor

The shaft is cleaned with a moistened duster.

ACHTUNG:

Darauf achten, dass die verwendeten Reinigungsmittel nicht der Capstanachse entlang in das obere Lager fließen!

CAUTION:

Prevent the cleaning solvent to enter the upper bearing!

Schmierung:

Der Capstan Motor ist wartungsfrei; um jedoch die Lebensdauer zu erhöhen, empfehlen wir, das Capstan Lager einmal jährlich zu schmieren:

Falls ein O-Ring auf der Capstan-Achse sitzt, diesen nach oben abziehen und mit dem Oeler (Best.nr. 20.020.401) einen Tropfen PDP 65 Öl applizieren (Figure siehe Kapitel 9).

Lubrication:

The capstan motor is carefree; to increase its service life, we recommend to lubricate the capstan bearing once a year:

Remove the rubber ring if installed and apply one drop of capstan oil PDP 65 (Ordering number 20.020.401.04) see figure in section 9 for accurate application.

2.7.2 Andruckrolle

Wenn infolge Abnutzung die Gummirollen gewechselt werden, müssen immer alle Rollen gewechselt werden.

Reinigung:

Empfohlene Reinigungsmittel:

Spiritus
Wasser
Seifenlösung bis 70%.

Unzulässige Reinigungsmittel:

Unzulässige Reinigungsmittel:
Lacklösemittel, Aceton, Benzin, Benzol, Chlorothen, Petroleum, Toluol, Xylol, Trichloräthylen, Perchloräthylen, chlorierte Lösungsmittel und Naphta (Waschbenzin).

2.7.2 Pinch roller

If the rubber rollers are worn out, always replace the whole set of rollers.

Recommended detergents:

spirit
water
soap suds up to 70%

Prohibited detergents:

Prohibited detergents:
varnish remover, acetone, benzine, benzene, chlorothen, petroleum, toluene, trichlorethylene, perchlorethylene, chlorinated detergents and naphta.

2.7.3 Dämpfungspumpen

Reinigung der Dämpfungspumpe:
Empfohlene Reinigungsmittel:
Eloxal-Reiniger
Spiritus
Alkohol

Befettung der Dämpfungspumpe:
Sparsam mit Fett einreiben (Klüber-
Q-Paste NB50 Bestell No. 99.01.0502).
Pumpe anschliessend mit einem sauberen
Lappen von überschüssigem Fett reinigi-
gen bis nur noch ein feiner Fettfilm
zurückbleibt.

2.7.4 Bandführungselemente (wie Bandwaagen- rollen, Vorberuhigungsrollen etc.)

Reinigung mit einem weichen Lappen.

Reinigungsmittel:
Eloxal-Reiniger
Spiritus
Alkohol

Anmerkungen:
Bei der Reinigung dürfen die Bandfüh-
rungselemente nicht zerkratzt werden.

Kunststoffteile dürfen nicht mit Al-
kohol in Berührung kommen.

2.7.5 Tonköpfe

Die Tonköpfe werden mit einem Vlies-
tuch und STUDER Tonkopfreiniger ge-
reinigt.

ACHTUNG:

Keine magnetischen Felder (Werk-
zeuge, Kopfhörer, Lautsprecher)
in die Nähe der Tonköpfe bringen.

Entmagnetisieren

Magnetismus ist überall. Man findet
ihn als Restmagnetismus (Remanenz)
in Eisen- oder Metallteilen. Solche
Teile sind auch in Tonbandmaschinen
zu finden: Tonköpfe, Bandführungen
und die Capstan-Achse.
Durch den täglichen Gebrauch des Ge-
rätes oder unbeabsichtigten Kontakt
mit starken Magneten von Lautsprechern
Transistorradios oder Zeigermessgerä-
ten können die erwähnten Metallteile
magnetisiert werden.
Tonköpfe, die normalerweise aus mag-
netisch weichen Materialien bestehen,
nehmen den Magnetismus "leicht" auf
und sind auch schnell wieder entmag-
netisiert. Capstan-Achsen und Band-
führungselemente sind schwieriger zu
entmagnetisieren und bleiben länger
magnetisch.

2.7.3 Dash pot

Cleaning of the dash pot:
Recommended detergents:
Aluminate cleaner
spirit
alcohol

Lubrication of the dash pot:
Grease the dashpot very sparingly
(with Klüber Q-Paste NB50 Ordering
No. 99.01.0502). Now, clean the pot
of surplus grease with a soft piece
of cloth so that just a slight film
of grease remains.

2.7.4 Tape guidance elements (such as tape tension sensor rollers, prestabilizer rollers etc.)

Use a soft piece of cloth to clean
these parts.

Detergents:
Aluminate cleaner
spirit
alcohol

Remarks:
Don't scratch the tape guidance ele-
ments when cleaning them.
Avoid contact of alcohol with plastic
parts.

2.7.5 Sound heads

Clean the sound heads with fleece cloth
and STUDER soundhead cleaner.

CAUTION:

Keep the heads away from strong
magnetic fields (tools, head-
phones, loudspeakers).

Demagnetizing

Magnetism is everywhere. It is often
found as residual magnetism in iron
or steel objects. Magnetic tape record-
er components such as heads, steel
capstans and tape guides generally be-
come magnetized through use and some-
times from accidental exposure to ex-
ternal magnetic field sources such as
loudspeakers, transistor radios or
certain meters, all of which contain
strong permanent magnets.
Heads, normally made of magnetically
"soft" material, pick up magnetism
readily but are easily demagnetized.
Capstans and guides are made of harder
steels which are more difficult to
magnetize, but retain such magnetism
and are much harder to demagnetize.

Die magnetisierbare Schicht der Tonbänder ist sehr empfindlich auf Einwirkung durch fremde Magnetfelder, da das aufgezeichnete Signal selbst eine bleibende Magnetisierung örtlich wechselnder Grösse und Richtung ist. Wird bespieltes Tonband fremden Magnetfeldern ausgesetzt, kann die Qualität der Aufzeichnung vermindert werden. Dies zeigt sich als Verlust oder Dämpfung der höheren Frequenzen. Ebenso können Zischgeräusche und Hintergrundrauschen auftreten, was zu einer Verschlechterung des Geräuschspannungsabstandes um einige dB führt.

Bei magnetisierten Laufwerkteilen verschlechtert sich die Tonaufnahme bei jedem Abspielen des Bandes mehr. Die einzige Möglichkeit diesen Zustand zu korrigieren, ist das Entmagnetisieren aller betroffenen Laufwerkteile (ungefähr nach jeweils 100 Betriebsstunden).

Vorgehen beim Entmagnetisieren:

Eine Entmagnetisierungsdrossel (ANNIS HAN-D-MAG) ist unter der Bestellnummer 10.042.002.01 erhältlich.

1. Tonbandmaschine ausschalten. Alle Tonbänder müssen mindestens 30cm von der eingeschalteten Entmagnetisierungsdrossel entfernt sein.
2. Entmagnetisierungsdrossel ans Netz anschliessen.
3. Mit der plastikumhüllten Sonde der Entmagnetisierungsdrossel nahe an den zu entmagnetisierenden Teil fahren. Es ist nicht nötig, den Teil zu berühren, ein Abstand von 3 bis 5mm genügt. Die Sonde langsam hin und her bewegen und langsam vom Teil entfernen (ca. 7 bis 10cm/s bis zu einer Entfernung von ca. 30cm).
4. Drossel vom Netz trennen.

Hinweis

Die Entmagnetisierungsdrossel ist nur für Kurzzeitbetrieb ausgelegt, um einen maximalen Entmagnetisierungseffekt zu erzielen. Sie kann 6 bis 8 Minuten eingeschaltet bleiben, ohne dass sie zu heiss wird. Wenn eine Drossel am Netz eingesteckt bleibt und vergessen wird, sorgt eine interne thermische Schutzsicherung dafür, dass der Stromkreis permanent aufgetrennt und die Gefahr eines Brandausbruchs eliminiert wird.

Um Beschädigungen von Messinstrumenten wie VU-Meter etc. zu vermeiden, muss zwischen den Messwerken und einer eingeschalteten Drossel ein Minimalabstand von 2.5cm eingehalten werden.

The magnetic coating on recording tape is very sensitive to extraneous magnetism since the recorded signal itself is only a modulation of the residual magnetism retained in the thin layer of magnetic coating compound. Exposure to subsequent magnetic fields of any consequence degrades the recorded signal. Such degradation is noticeable as a loss or attenuation of the higher frequencies as well as an increase in unwelcome "hiss" or background noise which can amount to several dB.

Unless offending tape transport components are demagnetized, the condition worsens each time the tape is played. The only way to correct this condition effectively is to demagnetize offending components regularly (after approximately 100 operating hours).

How to demagnetize:

A demagnetizer (ANNIS HAN-D-MAG) is available under the order number 10.042.002.01.

1. Switch off the recorder. Make sure all tapes are at least 12" away from the energized demagnetizer.
2. Plug the demagnetizer into any convenient A.C. outlet.
3. Approach the component to be demagnetized with the plastic-jacketed probe. It is rarely necessary to actually touch the part. Just bring the probe tip to within 1/8" or 1/4". Wave sideways slightly, then withdraw slowly, while still energized, at a rate no faster than 3" to 4" per second, to a distance of at least 12".
4. Disconnect the demagnetizer from its power source.

Note

For maximum demagnetizing efficiency, the demagnetizer is rated for practical intermittent duty. It may be left connected to power for six to eight minutes at a time without overheating. If, by accident, you should forget to disconnect this powerful demagnetizer, an internal calibrated thermal protector will permanently open the circuit, thus eliminating a fire hazard.

VU-meters, etc. are safe as long as the energized demagnetizer is not brought closer than 1" to the meter movement.

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3. LAUFWERKEINSTELLUNGEN

3. TAPE TRANSPORT ADJUSTMENTS

3.1

Einstellungen an der Stromversorgung

3.1

Adjustments to the power supply

3.1.1

Spannungseinstellungen am Stabilizer
1.180.465 oder 1.180.466 GR30 EL8

Beim Auswechseln eines Stabilisators ist zu beachten, dass eine Abweichung von 100mV bei den Speisespannungen $\pm 12V$ eine Bandzugänderung von ca. 100p zur Folge hat.

Erforderliche Messgeräte:
Universalmessinstrument (40k Ω /V) oder Digitalvoltmeter.

Einstellvorgang:

Gewisse Spannungen sind voneinander abhängig. Die Reihenfolge der Einstellungen muss deshalb eingehalten werden.

Testpunkt 1:

0V

Testpunkt 6:

+24V $\pm 0,1V$ einstellbar mit R28

Testpunkt 5:

+12V $\pm 0,1V$ einstellbar mit R29

Testpunkt 2:

-12V $\pm 0,1V$ einstellbar mit R30

Testpunkt 3:

-5V

Testpunkt 4:

+5,2V $\pm 50mV$ einstellbar mit R9 auf
Switching-Regulator 1.180.491

3.1.1

Voltage adjustments for the stabilizer
1.180.465 or 1.180.466 GR30 EL8

When a stabilizer is being replaced, the fact should not be overlooked that a deviation of 100 mV in the + 12V supply voltage causes a change in the tape tension of approximately 100 p.

Required measuring instruments:
Multimeter (40 k Ω /V) or digital voltmeter.

Adjustment procedure:

There is an interdependence between certain voltages. The following adjustment sequence must, therefore, be adhered to:

Testpoint 1:

0 V

Testpoint 6:

+24V $\pm 0.1V$, adjustable with R28

Testpoint 5:

+12V $\pm 0.1V$, adjustable with R29

Testpoint 2:

+12V $\pm 0.1V$, adjustable with R30

Testpoint 3:-

5V

Testpoint 4:

+5.2V $\pm 50mV$, adjustable with R9 on
switching regulator 1.180.491

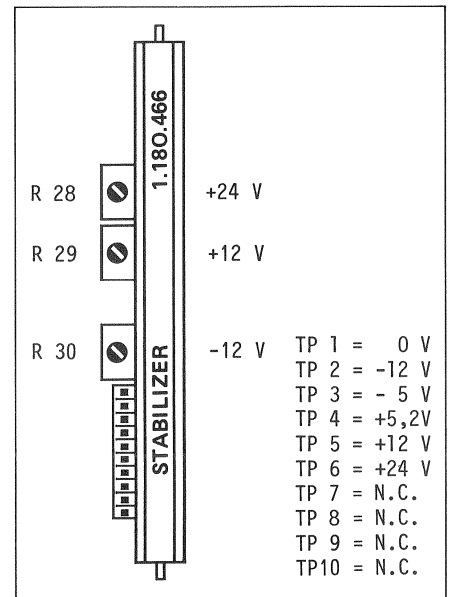


Fig. 3.1.1

Testpunkte und Regler

Testpoints and trimmer potentiometers

3.1.2 Einstellung der Strombegrenzung des Switching-Regulators 1.180.491 GR35 EL1

Auf diese Einstellung soll im Normalfall verzichtet werden. (Werkeinstellung)

Erforderliche Messgeräte:

- Universalmessinstrument (40kOhm/V) oder Digitalvoltmeter
- Lastwiderstand 0,860hm/30Watt.

Einstellvorgang:

- Ausgangsspannung von $5,2V \pm 50mV$ auf Stabilizer Print TP4 prüfen. Wenn nötig nachjustieren (R9).
- Maschine ausschalten und alle Prints der Laufwerk-(GR30) und Prozessorsteuerung (GR35) entfernen. Es darf nur noch der Print 1.180.491 GR35 EL1 eingeschoben sein.
- Lastwiderstand 0.860hm/30Watt an der Stromschine GR35 EL11 anschliessen
- Schwarze Anschlusslitze $\approx 0.0V$
- Grüne Anschlusslitze $\approx 5,2V$

3.1.2 Adjusting the current limitation of the switching regulator 1.180.491 GR35 EL1

This setting should normally not be changed (factory calibration).

Required measuring instruments:

- Multimeter (40 kOhm/V) or digital voltmeter.
- Ballast resistor 0.86 Ohm/30W.

Adjustment procedure:

- Check whether output voltage on stabilizer board TP4 is $5.2V \pm 50mV$. Readjust if necessary (R9).
- Switch recorder off and pull out all boards of the tape transport control (GR35). Only circuit board 1.180.491 GR35 EL1 should be left in place.
- Connect ballast resistor 0.86 Ohm/30W to the bus bar GR35 EL11. Black connecting lead = 0.0V Green connecting lead = 5.2V

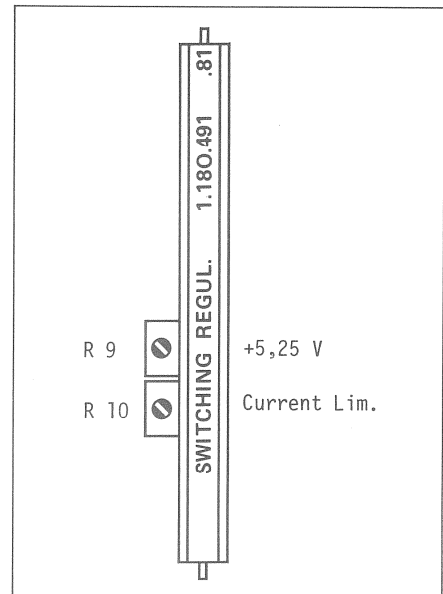


Fig. 3.1.2
Einstellregler
Trimmer potentiometer

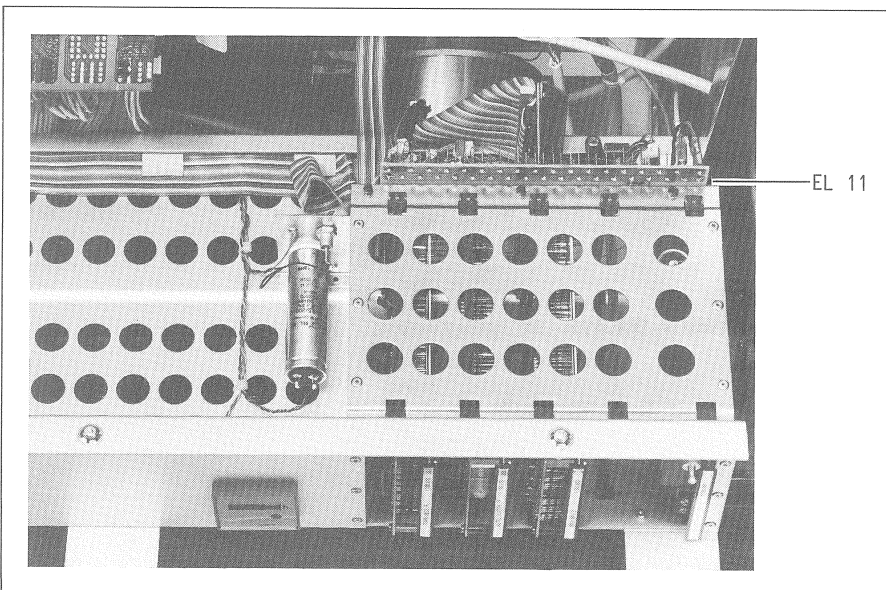


Fig. 3.1.3
Stromschiene für Begrenzungsmessung

Fig. 3.1.3
Bus bar for measuring current limitation

- Maschine einschalten
- Parallel zum Lastwiderstand ein Voltmeter anschliessen
- Am Potentiometer R10 drehen bis die Spannung am Voltmeter zu sinken beginnt.
- Potentiometer zurückdrehen bis die Spannung ihren ursprünglichen Wert gerade wieder erreicht hat. (Ein allfälliges Pfeifen des Switching Regulators verstummt).

- Switch recorder on
- Connect voltmeter in parallel to ballast resistor
- Close potentiometer R10 until the voltage at the voltmeter starts to drop.
- Reopen potentiometer until the voltage regains its original value. (Singing of the switching regulator, if audible, should disappear).

3.2

Einstellungen am Command Receiver
1.180.436 GR30 EL2Vorbereitungen:

Erforderliches Messgerät:

Voltmeter (Ri 40kOhm/V) oder Digital-
voltmeterKontrollieren, ob Kondensator C18 bei
TP3 richtig eingelötet ist:Dem Move-Sensor entsprechend ist C18
bei der Variante 1.180.181 inaktiv.

Prüfen der Jumperpositionen:

- Jumper S1-S5 gemäss Spezifikationen einsetzen:
- Jumper S1 und S2 bestimmen die nominale Play-Bandgeschwindigkeit
- Jumper S3, S4 und S5 sind immer in Normalposition

3.2

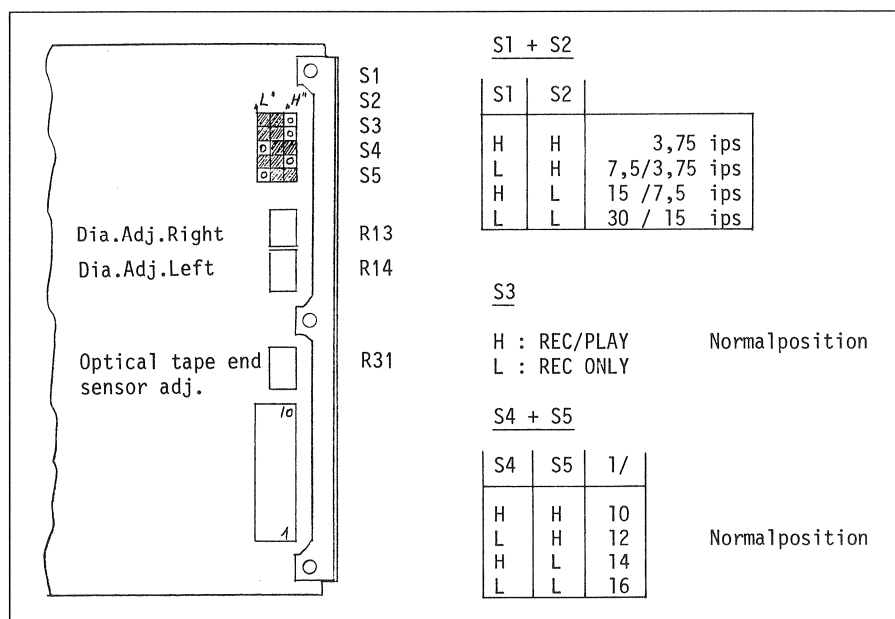
Adjustments at command receiver
1.180.436 GR30 EL2Preparatory steps:

Required measuring instrument:

Voltmeter (Ri 40 kOhm/V) or digital
voltmeterCheck whether capacitor C18 is cor-
rectly soldered in at TP3:Corresponding to the type of move
sensor, C18 is inactive in the versi-
on 1.180.181.

Check jumper positions:

- Insert jumpers S1-S5 according to specifications :
- Jumpers S1 and S2 define the nominal tape speed for play mode
- Jumpers S3, S4, and S5 are always in their standard position

Fig. 3.2.1
JumperpositionenFig. 3.2.1
Jumper positionsEinstellungen am Tape Deck Interface
1.180.472.00 GR35 EL5Jumper 3:A: Capstan schaltet aus wenn kein
Band eingelegt ist

N: Normal

Jumper 2:A: Nur mit Option 1.180.486.00; wahl-
weise interne oder externe Capstan-
frequenz

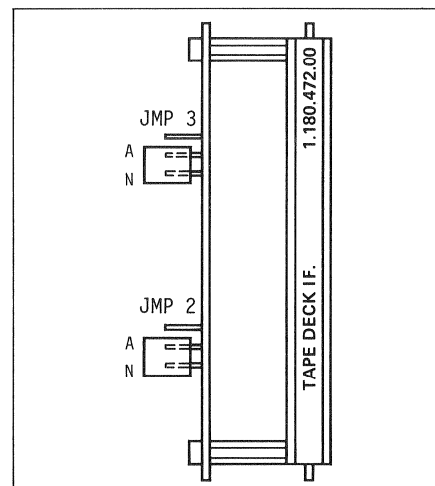
N: Normal, nur interne Capstanfrequenz

Adjustments at tape deck interface
1.810.472.00 GR35 EL5Jumper 3:A: Capstan shut off if no tape is
loaded

N: Normal

Jumper 2:A: Only with option 1.180.486.00; in-
ternal or external capstan frequen-
cy selectable

N: Normal, internal capstan frequency



3.2.1

Einstellung der Lichtschranke
1.180.300 GR16

- Magnetband auflegen
- Lichtwerfer mechanisch einstellen:
Durch Drehen des Lichtwerfers den Lichtkegel auf dem eingelegten Magnetband so ausrichten, dass er waagrecht zu liegen kommt. Fig.3.2.3
- Potmeter R31 (auf 1.180.436) so einstellen, dass in Playfunktion der Bandzähler noch arbeitet.

Während dem Umspulen und den Locate-Funktionen muss der Zähler ebenfalls noch einwandfrei arbeiten ohne aussetzen.

- Wird das Magnetband von der Lichtschranke abgehoben muss der Zähler stoppen, obwohl die Rolle des Move-sensor dreht.
- Der Print Command-Receiver 1.180.436 ist auf eine Verlängerungskarte 96 pol. (Nr. 1.228.325) aufzustecken. Mit einem Universalinstrument an der Steckerleiste 24C (Y-TRSP) die Spannung messen (0Volt von TP1).

Ohne Magnetband muss die Spannung <0,4Volt DC sein. Wird das Band wieder eingelegt und die Laufwerkstaste PLAY gedrückt, muss die Spannung >3Volt DC erreichen. Beide Anforderungen müssen deutlich erfüllt werden.

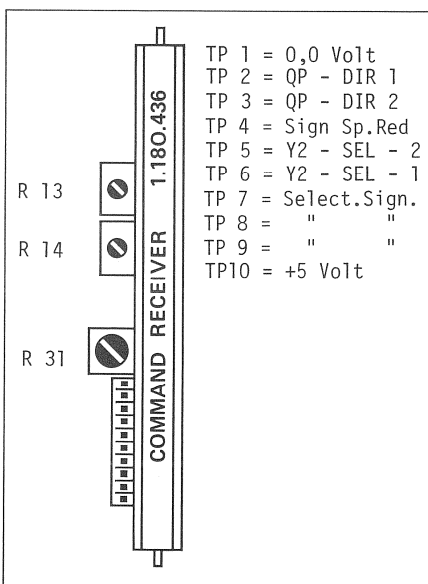


Fig. 3.2.2
Testpunkte und Regler
Testpoints and trimmer potentiometers

3.2.1

Adjusting the light barrier 1.180.300
GR16

- Mount magnetic tape
- Perform mechanical emitter adjustments:
By rotating the emitter, align illumination cone on the tape in such a manner that the cone is positioned horizontally. (see Fig. 3.2.3).
- Adjust potentiometer R31 (on 1.180.436) in such a manner that the counter still advances in play mode.

The counter should also operate without skipping in spooling and in locate mode.

- When the tape is lifted off the light barrier, the counter should stop even though roller of the move sensor rotates.
- Mount command receiver circuit board 1.180.436 on a 96-terminal extension board (No. 1.228.325). Measure voltage (0 volt of TP1) on the multi-point connector 24C (Y-TRSP) with the aid of a multimeter.

In the absence of a tape the voltage should be <0.4VDC. When the tape is reinserted and the PLAY key is pressed, the voltage should be >3 VDC. Both requirements must be safely met.

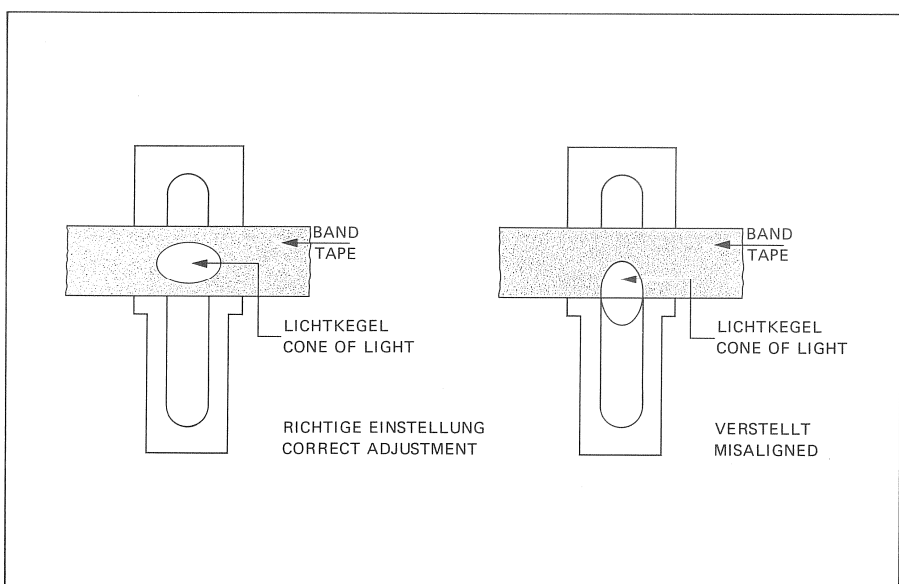


Fig. 3.2.3
Einstellung des Lichtwerfers
Emitter adjustment

Fig. 3.2.3
Emitter adjustment

3.2.2

Einstellung des Bandauslaufes beim Umspulen

Bei allen Spulendurchmessern ist die Bremsung am Bandende zu gewährleisten. Werden immer dieselben Spulendurchmesser verwendet, kann die Einstellung optimiert werden; für unterschiedliche Durchmesser ist ein Kompromiss zu suchen.

Die Einstellung kann mit den folgenden Voraussetzungen durchgeführt werden:

- Spulendurchmesser = 14"
- Geschwindigkeit = 15ips
- Einstellbarer Einsatzzpunkt der Reduzierung linke und rechte Seite 1Min. vor Bandauslauf

Einstellvorgang:

- Magnetband einlegen
- Magnetband etwa 4 Min. vor Bandauslauf parkieren
- Mehrmals zum entsprechenden Bandende umspulen:
- Mit Potentiometer R13 wird der Einsatzzpunkt des Bandauslaufs für Rückwickelbetrieb eingestellt (Fig. 3.2.2).
- Mit Potentiometer R14 wird der Einsatzzpunkt des Bandauslaufs für Vorwickelbetrieb eingestellt (Fig. 3.2.2).
- Nach erfolgter Einstellung Bandauslauf nochmals prüfen und wenn nötig nachjustieren.

3.2.2

Adjusting the tape-end deceleration for spooling mode

The tape-end deceleration should work correctly for any reel size. If only one reel size is used, the deceleration can be optimized; if more than one size is used, a compromise must be found.

This adjustment can be made under the following conditions:

- Reel diameter 14"
- Speed = 15 ips
- Adjusting the cut-in point of the deceleration for the left-hand and the right-hand side to 1 min before the end-of-tape position.

Adjustment procedure:

- Thread magnetic tape
- Park tape approx. 4 min. ahead of its end position.
- Spool tape to the corresponding end position several times:
- The cut-in point of the deceleration in the rewind direction can be adjusted with potentiometer R13(Fig.3.2.2)
- The cut-in point for the deceleration in the forward wind direction can be adjusted with potentiometer R14(Fig. 3.2.2).
- After the tape deceleration has been adjusted, recheck the setting and readjust if necessary.

3.2.3

Einstellung des Bandbewegungs-und Richtungssensors
1.180.181 GR17

Der Bandbewegungs-und Richtungssensor ist mechanisch und elektrisch äusserst Präzise justiert. Diese Arbeit kann nur der Hersteller durchführen. Sollten mechanische Fehler auftreten (Kugellager erzeugen ein Geräusch) oder eine Lichtschranke ausfallen, so ist die ganze Baugruppe auszutauschen.

Der Print 1.180.185 am Sensor kann jedoch ersetzt werden. Dabei ist die Symmetrie der Signale einzustellen.

Erforderliches Messgerät:
Oszilloscope

Einstellvorgang:

- Band auflegen
- Oszilloscope an Command Receiver TP2 (QP-DIR1) und TP3 (QP-DIR2) anschliessen.
- Taste Schnellwickeln vorwärts drücken.

3.2.3

Adjusting the tape move and direction sensor
1.180.181 GR17

The tape move and direction sensor has been calibrated mechanically and electronically with an extraordinary degree of accuracy. This type of adjustment can only be performed by the manufacturer. Should any mechanical defects occur (bearing noisy) or if one of the light barriers should fail, the complete assembly must be exchanged.

However, the circuit board 1.180.185 of the sensor can be replaced in the field. In this case the symmetry of the signals must be adjusted.

Required measuring instrument:
Oscilloscope

Adjustment procedure:

- Thread tape
- Connect oscilloscope to command receiver TP2 (QP-DIR1) and TP3 (QP-DIR2).
- Press fast forward key

- Auf dem Move-Sensor Print 1.180.185 das Move Signal symmetrisch einstellen (Tastverhältnis 1:1)
- mit Potentiometer R1 für QP-DIR1 und
- mit Potentiometer R2 für QP-DIR2.
- Balance signal on move sensor board 1.180.185 (pulse duty factor 1:1).
- With potentiometer R1 for QP-DIR1 and
- With potentiometer R2 for QP-DIR2.

3.3 Einstellung des Andruckaggregates 1.180.120

3.3.1 Vorbereitungen

Entferne beide Laufwerkabdeckungen und den Kopfträger.

Erforderliche Messgeräte:
Federwaage 2kg
Lehre Nr. 10.010.002.06
Diverse Gabelschlüssel, Schraubenzieher u.s.w.

3.3.2 Einstellvorgang:

Schritt 1

Kontrolle: Der Abstand zwischen Mutter (1) (SW 14) und Sechskantschraube (2) (SW 14) muss $3 \pm 0,5\text{mm}$ betragen

3.3 Adjusting the pinch roller assembly 1.180.120

3.3.1 Preparatory steps

Remove both tape transport covers and the headblock.

Required measuring tools:
Spring balance 2kg
Gauge: 10.010.002.06
Various open-end wrenches, screw drivers, etc.

3.3.2 Adjustment procedure

Step 1

Check: the distance between the nut (1) (SW 14) and the hexagon screw (2) (SW14) should measure $3 \pm 0.5\text{ mm}$.

Hinweis:

Abkürzung SW = Schlüsselweite in mm

Note:

Abbreviation SW = width across flats (in mm)

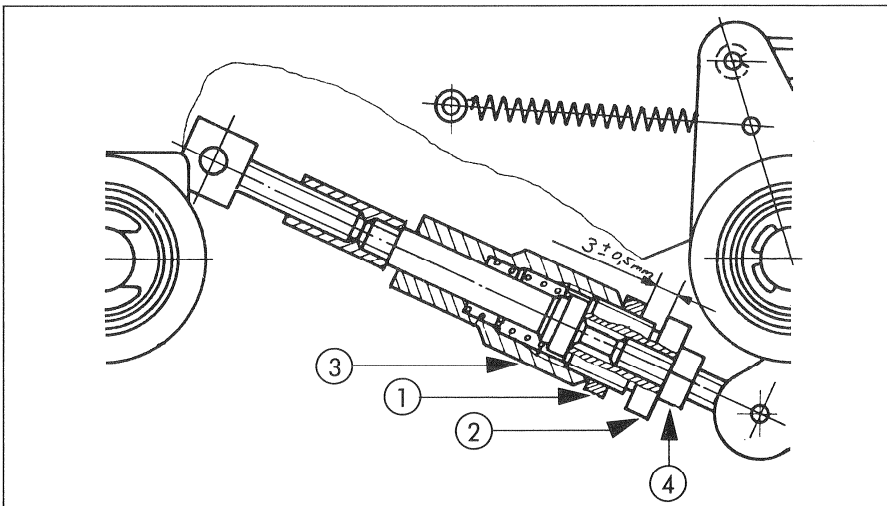


Fig. 3.3.1

Schritt 2

Andruckaggregat durch Drücken der Taste EDIT in Cutterstellung einfahren. Die Vorberuhigungsrolle wird durch Verschieben des Cuttermagneten (SW 7) auf ihre Playposition eingestellt. Mit Hilfe der Lehre Nr. 10.010.002.06 oder eines geraden Lineals wird der Abstand von 7.5mm zwischen dem Lagerzapfen des Vorberuhigungsarmes und dem Aussendurchmesser der Vorberuhigungsrolle eingestellt (siehe Fig. 3.3.2a und 3.3.2b).

Step 2

Move the pinch roller assembly into cutter position by pressing the EDIT button. The play position of the pre-stabilizer roller is adjusted by shifting the cutter magnet (SW 7). Use gauge No. 10.010.002.06 or a straight edge to obtain a distance of 7.5mm between the pivot pin of the pre-stabilizer roller (see Fig. 3.3.2a and 3.3.2b).

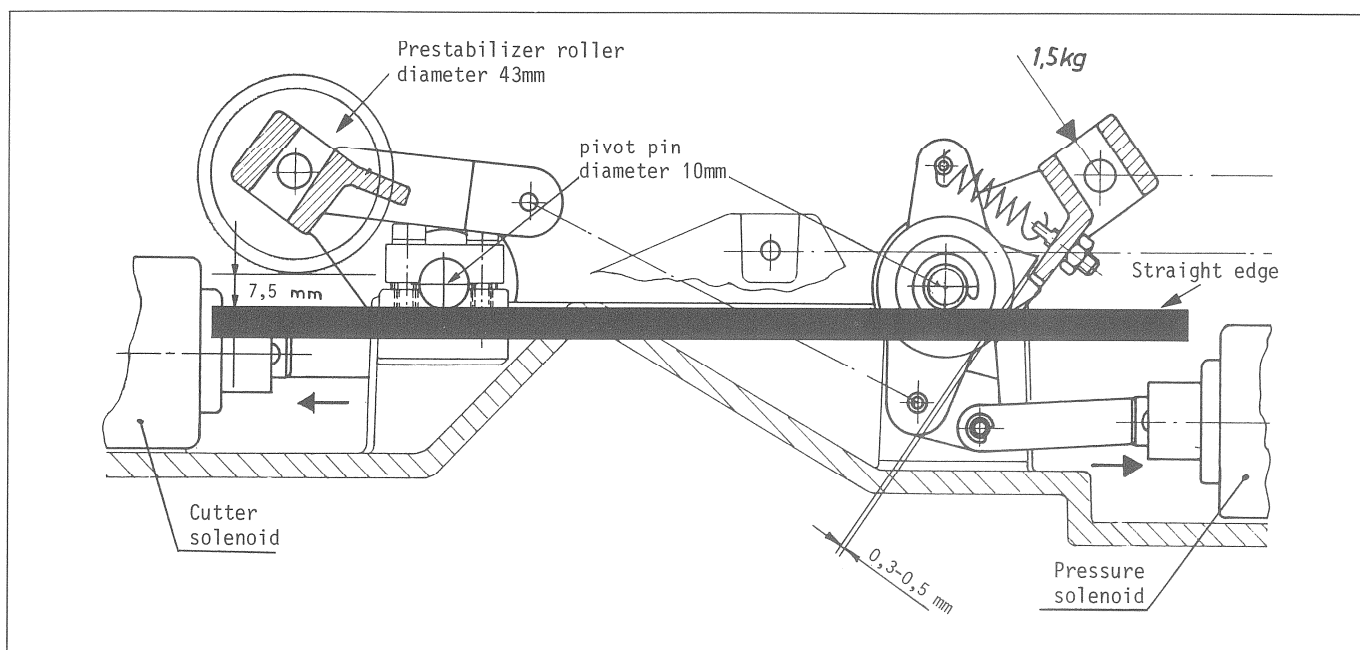


Fig. 3.3.2a
Andruckaggregat mit Lineal

Fig. 3.3.2a
Pinch roller assembly with straight edge

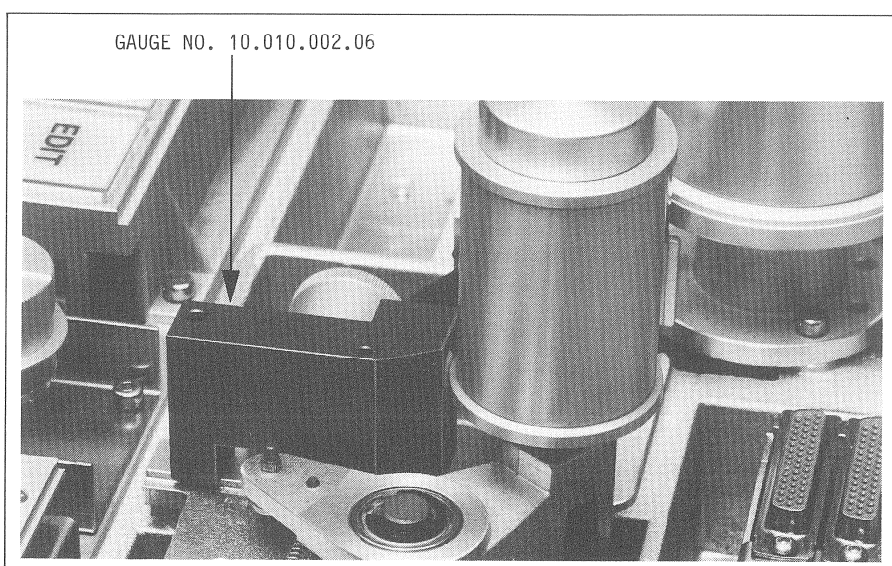


Fig. 3.3.2b
Andruckaggregat mit Lehre 10.010.002.06

Fig. 3.3.2b
Pinch roller assembly with
gauge 10.010.002.06

Schritt 3

Die Andruckrolle wird durch Drehen des Koppelgestänges (3) (SW 14) auf ihre Cutterstellung eingestellt. Der Abstand zwischen Andruckrolle und Capstanachse wird auf 3mm eingestellt und mit Mutter (4) (SW 8) gekontert.

Step 3

Adjust cutter position of pressure roller by rotating the linkage rods (3) (SW 14). The clearance between the pressure roller and the capstan shaft should be adjusted to 3 mm and secured with nut (4) (SW 8).

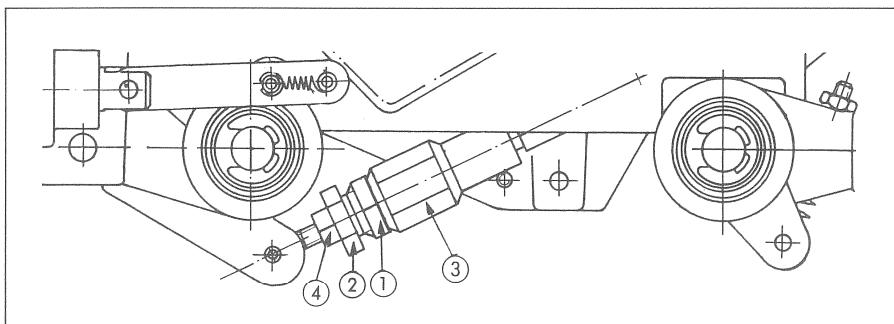


Fig. 3.3.3

Schritt 4

Kopfträger montieren
Taste PLAY drücken.

Die Andruckkraft der Andruckrolle mit einer Federwaage (0-2,5kp) messen. Sie soll im Moment des Abhebens der Andruckrolle von der Capstanachse 1,6kp $\pm$ 0,1kp betragen. Die Justierung erfolgt mit der Sechskantmutter (5) (SW 7) am Andruckarm (Fig. 3.3.4).

Step 4

Reinstall headblock.
Press PLAY key.

Measure pinching force of the pressure roller with a spring balance (0-2.5 kp). At the moment when the pressure roller lifts off the capstan shaft, it should measure 1.6kp $\pm$ 0.1kp. Correct the force by adjusting the hexagon nut (5) (SW 7) at the pressure arm (Fig. 3.3.4).

Schritt 5

Magnetband auflegen

Durch Verschieben des Andruckmagneten (SW 7) kann das Spiel (3) zwischen Andruckarm und Andruckhilfsarm auf 0,3 - 0,5mm eingestellt werden.

Das Spiel wird ersichtlich, wenn man die Andruckrolle von Hand leicht an die Capstanachse andrückt und die Laufwerkstasten PLAY und STOP wechselseitig drückt. (siehe Figur 3.3.4)

Nochmals Schritt 4 kontrollieren und ev. nachjustieren.

Step 5

Thread magnetic tape

The clearance (3) between the pinch roller arm and the tension arm can be adjusted to 0.3-0.5mm by shifting the pinch magnet (SW 7).

The clearance can be checked by manually pressing the pressure roller lightly against the capstan shaft and alternately pressing the PLAY and the STOP key (see Fig. 3.3.4).

Recheck settings of step 4 and readjust if necessary.

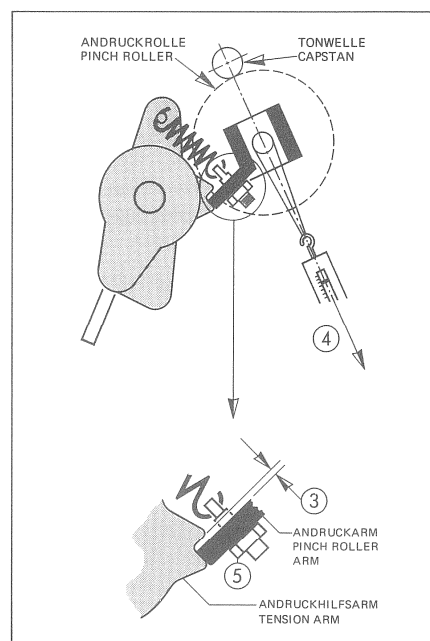


Fig. 3.3.4

Schritt 6

- Die Justierung der Dämpfungsdose (siehe Fig. 3.3.5) erfolgt durch feinfühliges Drehen des Dämpfungszylinders (14), wodurch die Ventilöffnung mehr oder weniger geschlossen wird.
- Prüfen, ob sich bei der wechselweisen Betätigung der Tasten Play und Stop das Andruckaggregat kontinuierlich und ruckfrei in seine Arbeits- und Ruheposition bewegt. Wird das Magnetband zurückgespult, und bei diesem Vorgang die Edit-Taste gedrückt, (Cutterposition, TLS-Code lesen), darf die Andruckrolle nicht überschwingen und dabei gegen die Capstanachse schlagen.
- Wenn das Aggregat richtig eingestellt ist und fehlerfrei arbeitet, muss der Dämpfungszylinder (14) seitlich mit Sicherungslack gegen Verdrehen gesichert werden.

Step 6

- The dash pot action is adjusted (see Fig. 3.3.5) by carefully rotating the damping cylinder (14), i.e. by opening or closing the valve opening.
- By alternately pressing the PLAY and the STOP key check whether the pinch roller assembly moves smoothly and without jerking into its working position and back to the stop. If the edit button is pressed while the tape is being rewound (cutter position, TLS code read), the pressure roller must not overshoot and bounce against the capstan shaft.
- After the unit has been adjusted and thus operates correctly, the cylinder (14) of the dash pot must be secured with glyptal to prevent it from twisting.

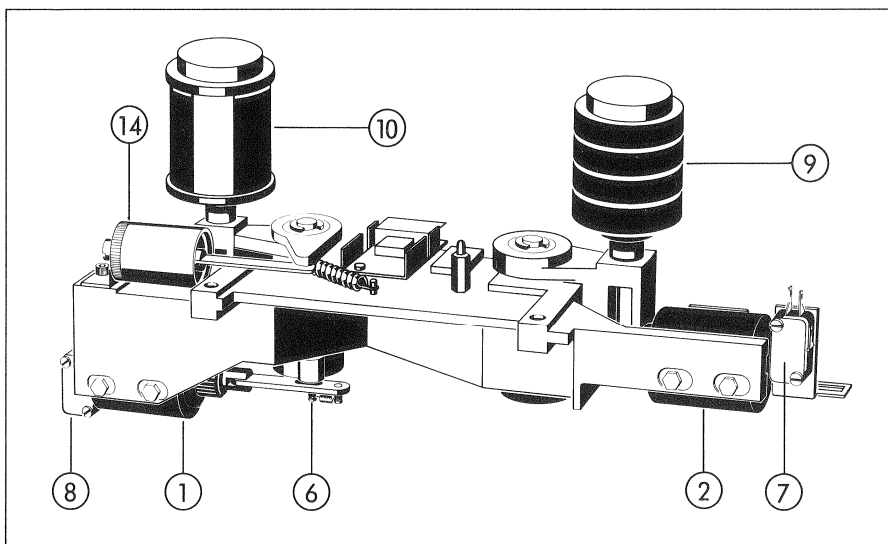


Fig. 3.3.5

Schritt 7

Durch Lösen der Sechskantschrauben (SW 5) kann der Schalterpunkt der Mikroswitcher (7 und 8) eingestellt werden. Der Schalterpunkt soll 0,2 - 0,4mm vor dem Endanschlag des Magnetankers liegen.

Die Betätigungsbolzen der Mikroswitcher dürfen im Endanschlag der Magnetanker die Mikroswitchergehäuse nicht berühren.

Wichtig:

Das Andruckaggregat darf nicht zu lange in PLAY oder EDIT-Position, bei nicht eingestellten Mikroswitches, eingefahren werden. Die Hilfswicklung des Cuttermagneten ist nur für kurzzeitigen Impulsbetrieb ausgelegt.

Step 7

The switch point of the microswitches (7 and 8) can be adjusted by loosening the hexagon screw (SW 5). The switch point should occur 0.2-0.4 mm before the plunger reaches the limit position.

The actuator pins of the microswitches must not touch the microswitch housing when the plunger has reached the limit stop.

Important:

The pinch roller assembly should not be held in the PLAY or the EDIT position for too long if the microswitch has not yet been adjusted. The auxiliary winding of the cutter magnet is only designed for short-duration pulse operation.

Schritt 8

- Magnetband auflegen
- Taste Edit drücken
- Prüfe:
Das Magnetband darf in der Cutterstellung die Capstanachse nicht berühren.
Ist dies jedoch der Fall, müssen Schritte 2-5 nochmals kontrolliert werden.

Step 8

- Thread magnetic tape
- Press EDIT key
- Check :
In cutter position, the tape must not touch the capstan shaft.
Should this be the case, recheck steps 2-5.

3.4Einstellung der mechanischen Bremsen
1.180.235/2453.4Adjusting the mechanical brakes
1.180.235/2453.4.1Vorbereitungen:

Beide Laufwerkabdeckungen entfernen.

3.4.1Preparatory steps :

Remove both tape transport covers.

Achtung:

Werden Einstellungen an den Bremsen (Wickelmotor) vorgenommen, muss die Maschine ausgeschaltet werden. (Unfallgefahr)
Bremsband und Bremstrommel nie mit Händen oder Werkzeugen an den Laufflächen berühren. (Schmutz und Fettrückstände verunmöglichen eine Bremswirkung)

Caution:

If adjustments are made to the brakes (spooling motor), the recorder must be switched off (to prevent injury).
Do not touch the contact surfaces of the brake band or the brake drum with your hands or a tool. (Contamination and grease spots kill the braking action).

Erforderliche Messgeräte:

- Federwaage 500g
- Federwaage 2kg
- Die Gabelschlüssel, Schraubenzieher u.s.w.
- Leerspule; Bandstück oder Schnur mit einer kleinen Schlaufe am Ende (zum Einhängen der Federwaage) Länge ca. 2 bis 3m.

Required measuring tools:

- Spring balance 500g
- Spring balance 2kg
- Open-end wrenches, screwdrivers, etc.
- Empty reel; tape section or piece of string with a small loop at the end (for hooking into the spring balance), length approx. 2-3m.

3.4.2EinstellvorgangSchritt 1

Das Spiel zwischen Bremshebel (3) und Anschlag (5) soll in Ruhelage 0,5-1mm betragen. Zum Einstellen ist die Trägerplatte (8) zu verschieben. Um die Trägerplatte (8) einzustellen, sind die Schrauben (11) (Inbus 3mm) und (12) (Inbus 5mm) zu lösen.

3.4.2Adjustment procedureStep 1

The clearance between the brake lever (3) and the stop (5) should be 0.5-1 mm in the neutral position. To adjust shift carrier plate (8). This can be done by loosening the screws (11) (3 mm hexagon socket head) and (12) (5 mm hexagon socket head).

Schritt 2

Bei voll eingefahrenem Magnetanker soll der Abstand zwischen Bremshebel (3) und Anschlag (5) 4 - 5mm betragen.

Step 2

When the armature of the solenoid is fully travelled in, the distance between the brake lever (3) and the stop (5) should measure 4-5 mm.

Schritt 3

Einlaufen der mechanischen Bremsen

- Molex Stecker ausziehen
- Maschine einschalten
- Wickelmotoren vor- und rückwärts laufen lassen, durch Betätigung der Bandzugwaage.
- Durch leichten Fingerdruck auf dem Bremshebel (3) (stärkere Bremsung) kann der Einlaufvorgang beschleunigt werden.

Hinweis:

Die Bremse darf nicht länger als 1-2 Minuten eingelaufen werden (Ueberhitzungsgefahr)

Schritt 4

Die Bremswirkung kann schnell überprüft werden, indem der Spulenadapter ruckartig vor- und zurückgedreht wird. (Klickgeräusch).

Ist keine Bremswirkung festzustellen (kein Klickgeräusch), sind folgende Arbeiten auszuführen:

Prüfen, ob die Bremsen mechanisch richtig eingestellt sind (Schritt 1 und 2 dieses Abschnitts).

Ist dies der Fall, und es zeigt sich immer noch keine Bremswirkung:

Bremsband und Bremsstrommel ausbauen und mit einem sauberen spiritusgetränkten Baumwollappen reinigen. Der Spiritus darf kein Öl oder Fett enthalten.

Die Reinigung des Bremsbandes sollte unter starkem Druck auf einer planen Unterlage durchgeführt werden. Nach der Reinigung muss die Oberfläche glänzen und darf keine Schmutzrückstände mehr aufweisen. Bremse wieder zusammenbauen und Schritt 1-3 wiederholen.

Schritt 5

Bremszug-Einstellung in Aufwickelrichtung (schwache Bremsung). Leerspule mit ca. 2-3m Band in Gegenbetriebslage auf Wickeladapter auflegen.

Federwaage (0 - 500p) am Bandanfang einhängen und zur Messung kontinuierlich vorziehen. Der Bremszug von $150g \pm 10p$ wird mit Schraube (1) (SW7) eingestellt.

Schritt 6

Bremszug-Einstellung in Abwickelrichtung (starke Bremsung) Leerspule mit ca. 2-3m Band in Betriebslage auf Wickeladapter auflegen.

Federwaage (0,5 - 3kp) am Bandanfang einhängen und zur Messung kontinuierlich vorziehen. Der Bremszug von $1,5kp \pm 0,1kp$ wird mit Schraube (2) (SW 7) eingestellt.

Step 3

Running in the mechanical brakes:

- Unplug Molex connector
- Switch recorder on
- Allow spooling motors to turn forward and backward by actuating the tape tension sensor.
- The run-in time can be shortened if you press lightly with your fingers against the brake lever (3) (stronger braking action).

Note:

To prevent overheating, the brake should not be run in for more than 1-2 minutes!

Step 4

The braking action can be checked quickly by moving the reel adapter forward and backward with a jerky motion (audible click).

If no braking action is felt (no clicking noise), the following steps should be performed:

Check whether the mechanical adjustment of the brakes is correct (steps 1 and 2 of this section). If there is no braking action even though the adjustments in steps 1 and 2 have been made:

Disassemble brake band and brake drum and clean it with a clean piece of cotton cloth soaked with methylated spirit. The spirit must be absolutely free of oil and grease.

To clean the brake band, it should be pressed firmly against a flat backing. The surfaces should be shiny after cleaning and free of residual contaminants. Reassemble brake and repeat steps 1-3.

Step 5

Adjusting the brake tension in the take-up direction (weak braking). Mount empty reel with approximately 2-3 m of tape on the reel adapter in the rewind direction.

Hook the spring balance (0-500p) into leading tape end and pull gradually for measuring. The required brake tension of $150g \pm 10g$ can be adjusted with screw (1) (SW 7).

Step 6

Adjusting the brake tension in the supply direction (strong braking). Mount empty reel with approximately 2-3 m of tape on the reel adapter in the play direction.

Hook spring balance (0.5-3kp) into leading tape end and pull gradually for measuring. The required brake tension of $1.5kp \pm 0.1kp$ can be adjusted with screw (2) (SW 7).

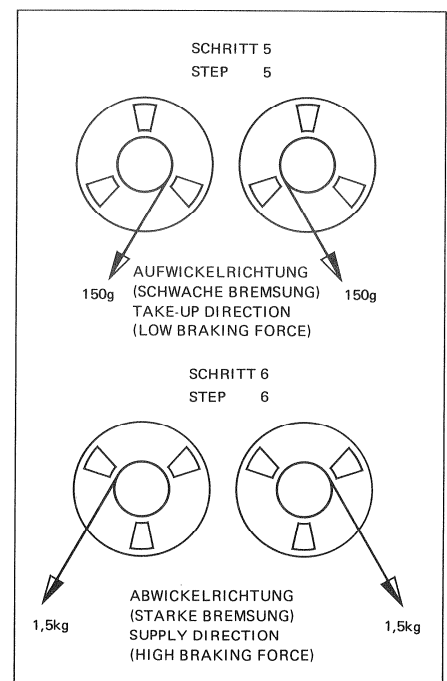


Fig. 3.4.1

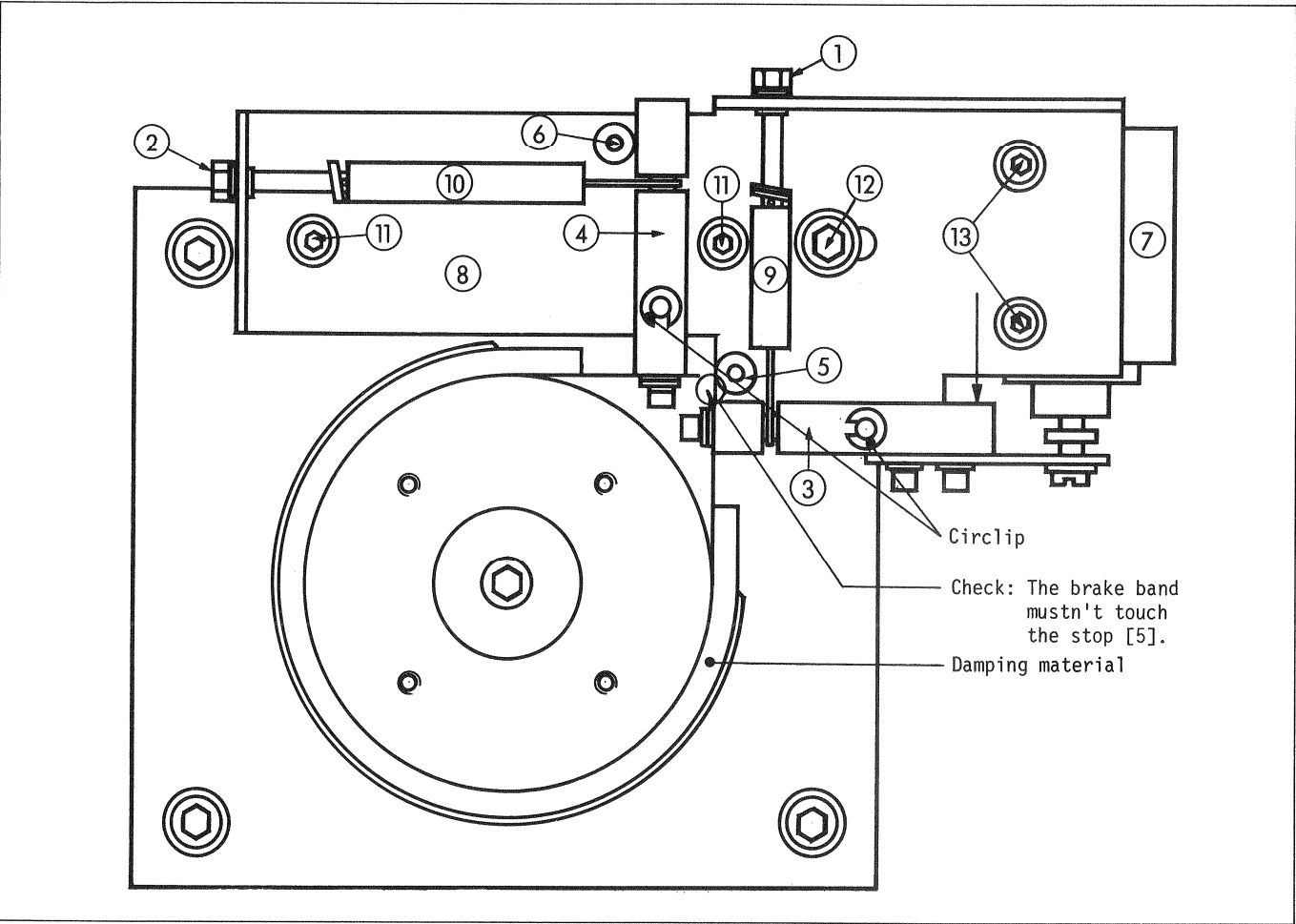


Fig. 3.4.2

3.5 Einstellung der Bandzugregelung mit Spoolingmotor Ctrl. 1.180.455 GR30 EL6

Bestehend aus:

- 1 Sp. Motor Ctrl 1.180.455
- 1 Spooling Motor Power Unit (mit Tape-protect timing PCB) 1.180.500.83.
- 1 Sp. Motor Power Supply 1.180.321
- 1 Federsystem mit Dämpfungspumpe
 - 1.180.220 links 2"
 - 1.180.221 rechts 2"
- 1 MPU2 6800 1.180.482

Anmerkung:

Alle Maschinen bis Serie Nr. 20199 mit Sp.Mot.Ctrl. 1.180.455 und einem Federsystem mit Fettdämpfern werden hier nicht behandelt. Siehe dazu Studer Service Information SI 54/80 in Deutsch oder Englisch.

Übersicht über die Einstellvorgänge

- 3.5.1 Einstellung der Bandzugwaage
- 3.5.2 Einstellung von Federn und Dämpfungspumpe
- 3.5.3 Einflussparameter für die Bandzugwaageneinstellung
- 3.5.4 Einstellung des Bandzuges
- 3.5.5 Einstellung der elektrischen Bremsen (Bandende)
- 3.5.6 Einstellung der Bandzugwaagen-Endschalter
- 3.5.7 Kontrolle der Wickelmotor-Steuerung.

3.5 Adjusting the tape tension on recorders equipped with spooling motor control 1.180.455 GR30 EL6

Comprising :

- 1 Spooling motor control 1.180.455
- 1 Spooling motor power unit (with tape protect timing PCB) 1.180.500.82
- 1 Spooling motor power supply 1.180.321
- 1 Spring system with dash pot
 - 1.180.220 left-hand
 - 1.180.221 right-hand
- 1 MPU2 6800 1.180.482

Note:

Recorders up to serial No. 20199 equipped with spooling motor control 1.180.455 and a spring system with grease dash pots are not covered in this manual. Refer to Studer Service Information SI 54/80 in English or German.

Summary of adjustment procedures

- 3.5.1 Adjusting the tape tension sensor
- 3.5.2 Adjusting the springs and the dash pot
- 3.5.3 Parameters that influence the tape tension sensor adjustment
- 3.5.4 Adjusting the tape tension
- 3.5.5 Adjusting the electric brakes (end of tape)
- 3.5.6 Adjusting the tape tension sensor limit switches
- 3.5.7 Checking the spooling motor control

HINWEIS:

Kapitel 3.5 enthält alle Einstellungen im Zusammenhang mit der Spooling motor control 1.180.455. Um Verwechslungen mit dem nachfolgenden Kapitel 3.6 zu vermeiden, welches die Einstellungen im Zusammenhang mit der Spooling motor control 1.180.457 behandelt, ist auf jeder Seite dieses Kapitels am oberen Seitenrand das folgende Zeichen abgedruckt:

455

NOTE:

Section 3.5 treats all tape tension adjustments in connection with spooling motor control 1.180.455. To prevent confusion with section 3.6 that treats the adjustments for machines equipped with spooling motor control 1.180.457 you find the subsequent symbol on top of every page of this section:

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3.5.1

Einstellung der BandzugwaageSchritt 1

Die Senkschraube [1] lösen und den Rollenteller abheben. Sechskantmutter der drei Stiftschrauben [3] lösen. Den Hebelflansch [2] von Hand niederdrücken und die drei Stiftschrauben [3] im Uhrzeigersinn vorsichtig drehen bis die Ankerscheibe [4] gleichmäßig auf der Magnetglocke [5] aufliegt.

Die drei Stiftschrauben [3] wieder je um 1/5 Drehung im Gegenuhrzeigersinn lösen, damit sich ein Luftspalt von 0,1-0,15mm zwischen Ankerscheibe und Magnetglocke ergibt. Gerät einschalten und durch wechselweises Drücken der Tasten STOP und EDIT das korrekte Blockieren und Lüften der Magnete prüfen.

Stiftschrauben in ihrer Position festhalten und Muttern festziehen. Rollenteller wieder montieren und vor dem Festziehen der Schraube [1] die Potentiometerkupplung [6] gegen die Bandzugwaagen-Ruhestellung drücken. Kontrolle EDIT-STOP wiederholen.

Kontrolle:

Die Bandzugwaage von Hand bis zu einem Drehwinkel von etwa 60° auslenken, dann die Taste EDIT drücken. Die Bandzugwaage muss dabei blockieren und darf nicht durch die Federkraft des Federsystemes in die Ruheposition zurücklaufen.

Schritt 2

Vor dem Einstellen des Bandzugwaagenpotentiometers die Speisespannung (+12V und -12V) prüfen.

Voltmeter an Mittelabgriff [7] des Bandzugwaagenpotentiometers gegen Masse anschliessen.

Litzenanschlüsse der Potentiometer-Mittelabgriffe:
Links (GR12) Farbe braun
rechts (GR13) Farbe rot

Mutter [8] ein wenig lösen.

In Ruhestellung der Bandzugwaage, durch Drehen des Bandzugwaagenpotentiometers eine Spannung von $1,95V \pm 25mV$ einstellen. Mutter [8] festziehen. Prüfen ob die eingestellte Spannung sinkt, wenn die Bandzugwaage aus der Ruhestellung gedreht wird.

3.5.1

Adjusting the tape tension sensorStep 1

Loosen countersunk-head screw (1) and lift off rollerplate. Loosen hexagon nuts of the three set screws (3). Press lever flange (2) down by hand and carefully rotate the three set screws (3) in the clockwise direction until the armature disk (4) rests evenly on the magnet bell (5).

Now turn set screws (3) back in the counterclockwise direction by 1/5 of a turn so that an airgap of 0.1-0.15 mm is obtained between the armature disk and the magnet bell. Switch recorder on and check for correct blocking and lifting of the magnets by alternately pressing the STOP and the EDIT key.

Retain set screws in their present position and tighten nuts. Reinstall roller plate and press potentiometer coupling (6) against the neutral position of the tape tension sensor before retightening screw (1). Repeat EDIT-STOP check.

Check:

Open the tape tension sensor by hand to a deflection of approximately 60°, then press EDIT button. The tape tension sensor should block i.e. it should not return to its neutral position on account of the spring tension.

Step 2

Check the supply voltage (+12V and -12V) before making any adjustments to the potentiometer of the tape tension sensor.

Connect voltmeter to wiper terminal (7) of the tape tension potentiometer and against ground.

Stranded leads of the wiper terminal:
Left-hand (GR12) color: brown
Right-hand (GR13) color: red

Loosen nut (8) lightly.

With the tape tension sensor in its neutral position adjust for a voltage of $1.95V \pm 25mV$ by turning the tape tension sensor potentiometer. Retighten nut (8). Check whether the previously adjusted voltage drops when the tape tension sensor is shifted out its neutral position.

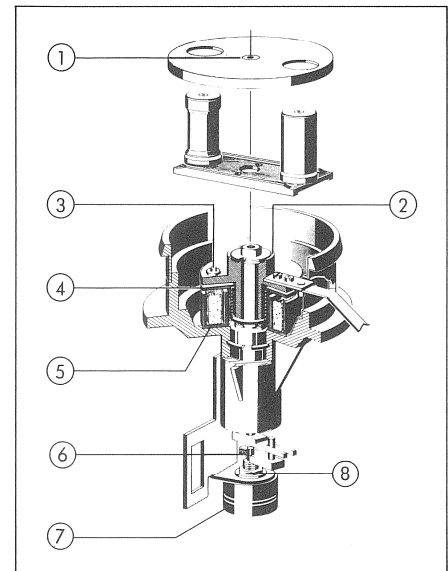


Fig. 3.5.1

3.5.2

Einstellung von Federn und DämpfungspumpeVorbereitungen:

- Maschine ausschalten
- Bandzugwaagendeckel entfernen
- Gravierte Bandzugwaagendeckel montieren und vor dem Festziehen der Schraube [1] die Potentiometerkupplung [6] gegen die Bandzugwaagen-Ruhestellung drücken (siehe Fig. 3.5.1).
- In der Bandzugwaagen-Ruhestellung den Nullpunkt des gravierten Bandwaagendeckels mit einem weichen Bleistift auf den Flanschring übertragen.
- Dämpfungspumpe auf minimale Dämpfung einstellen.

Erforderliche Messgeräte:

- Federwaage 500g
- Federwaage 2kg
- Massstab
- Leerspule; Bandstück mit einer kleinen Schlaufe am Ende (zum Einhängen der Federwaage) Länge ca. 2-3m)

- Gravierte Bandzugwaagendeckel

2" : Nr. 10.010.002.07

- Allgemeine Werkzeuge

Hinweis:

Bei allen Messungen mit der Federwaage müssen die Bandabschnitte I und II parallel laufen um Fehlmessungen zu vermeiden.

3.5.2

Adjusting the springs and the dash potPreparatory steps

- Switch recorder off
- Remove cover of tape tension sensor
- Install engraved tape tension sensor covers and press potentiometer coupling (6) against neutral position of tape tension sensor before securing screw (1) (see Fig. 3.5.1).
- With the tape tension sensor in its neutral position transfer the zero of the engraved tape tension sensor cover to the flange ring with the aid of a soft pencil.
- Adjust dash pot for minimum damping action.

Required measuring tools:

- Spring balance 500g
- Spring balance 2kg
- Ruler
- Empty reel; tape section with a small loop at one end (for hooking into the spring dynamometer, length approx. 2-3 m).

- Engraved tape tension sensor covers

2" : No. 10.010.002.07

- Tools as required

Note:

To ensure that the measurements taken with the spring dynamometer are correct, both tape sections I and II must run in parallel.

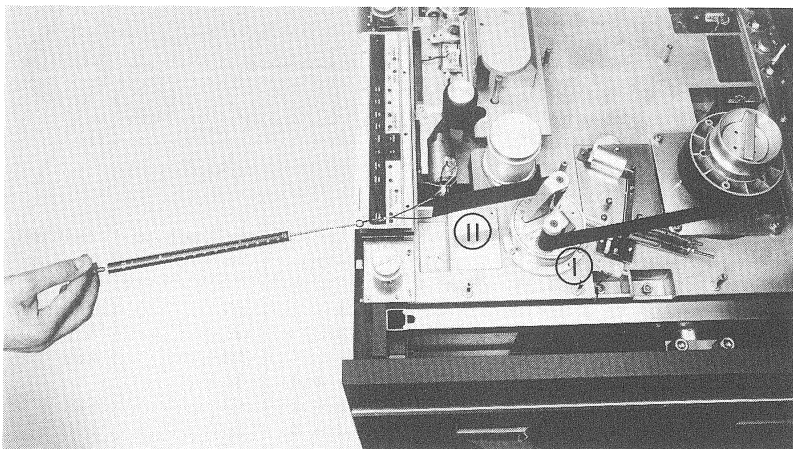


Fig. 3.5.2

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Rechtes Federsystem

Right-hand spring system

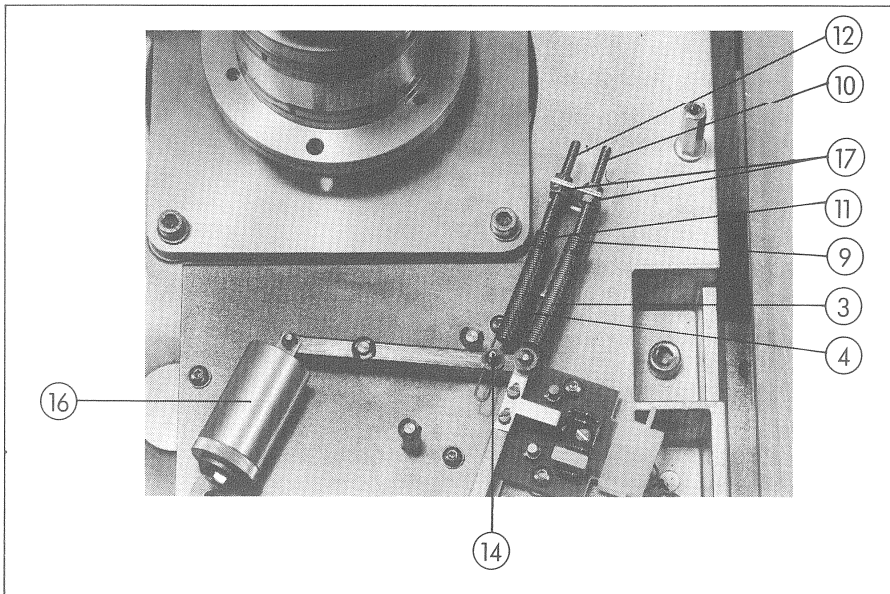


Fig. 3.5.3

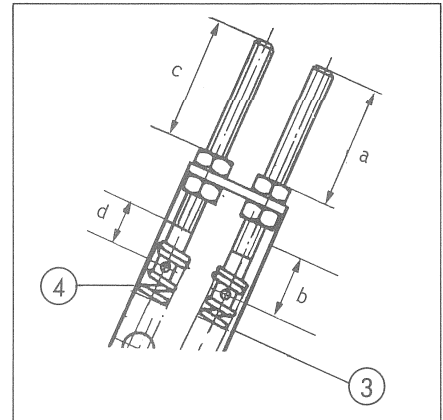


Fig. 3.5.4

a = 20mm
 b = 10 Federwindungen
 c = Die Feder [4] soll bei einem Drehwinkel von 35° einsetzen
 d = 16 Federwindungen

a = 20mm
 b = 10 coils of the spring
 c = The spring action (4) should set in with a deflection of 35°
 d = 16 coils of the spring

Schritt 1

Voreinstellung der Federn

Feder [4] vom Bolzen [14] aushängen. Position a, b und d einstellen. Die Zugkraft der Feder [3] nach den Werten in Fig. 3.5.5 kontrollieren und wenn nötig nachstellen (siehe Abschnitt 3.5.3).

Feder [4] wieder einhängen und Position C einstellen.

Die Zugkraft des ganzen Federsystems nach Fig. 3.5.5 kontrollieren und wenn nötig nachstellen (siehe Abschnitt 3.5.3).

Schritt 2
 Durch Drehen der Dämpfungspumpe [16] siehe Fig. 3.5.3 wird die Dämpfung des Federsystems eingestellt. Die Bandzugwaage wird bis zu einem Drehwinkel von 60° ausgelenkt und dann losgelassen. Das Zurücklaufen in die Ruhestellung muss kontinuierlich und ohne Aufprellen auf den Endanschlag erfolgen. Nach erfolgter Einstellung Schraube der Dämpfungspumpe mit Sicherungslack sichern.

Step 1

Preadjusting the springs

Unhook spring (4) from pin (14). Adjust items a, b, and d. Check whether the tension of spring (3) corresponds to the value specified in Fig. 3.5.5 and readjust if necessary (refer to section 3.5.3).

Refasten spring (4) and adjust item c.

Check the tension of the entire spring system as specified in Fig. 3.5.5 and readjust if necessary (refer to section 3.5.3).

Step 2
 The damping action of the spring system can be adjusted by rotating the dash pot (16) (see Fig. 3.5.3). Open tape tension sensor to a deflection of 60° and then release it. The return travel to the neutral position should be smooth and the sensor should not bounce against the stop. Secure screw of the dash pot with glyptal after the necessary adjustments have been made.

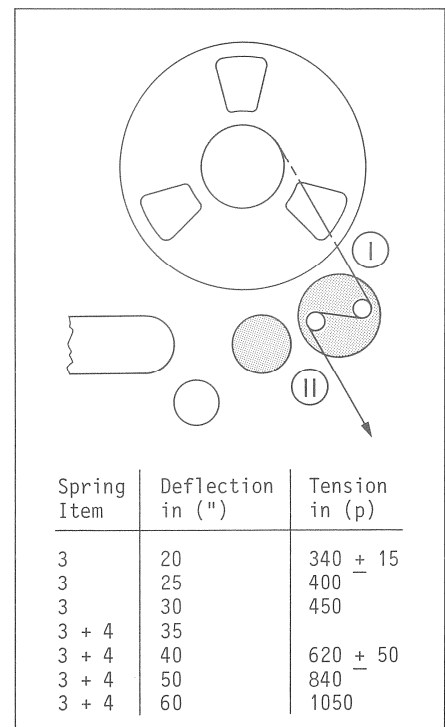


Fig. 3.5.5
 Rechtes Federsystem
 Right-hand spring system

Linkes Federsystem

Left-hand spring system

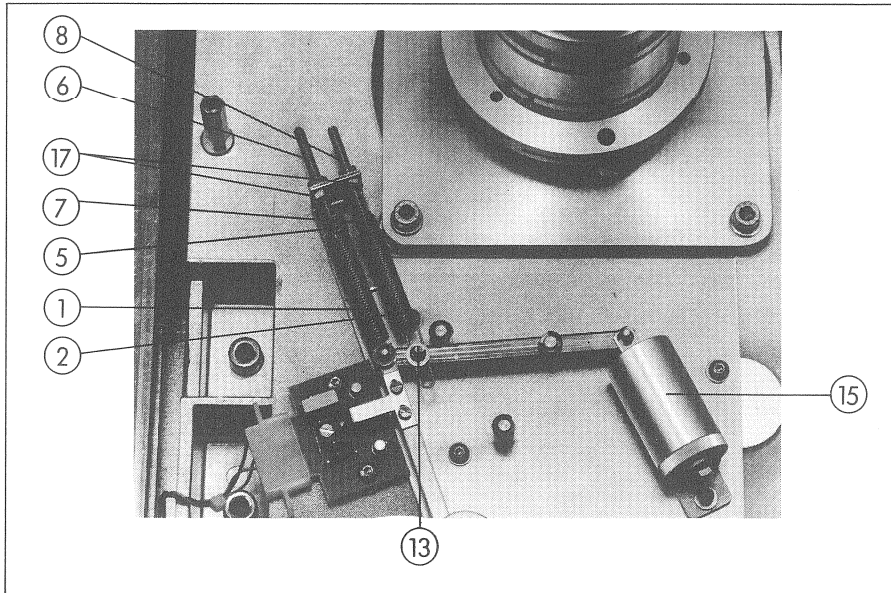


Fig. 3.5.6

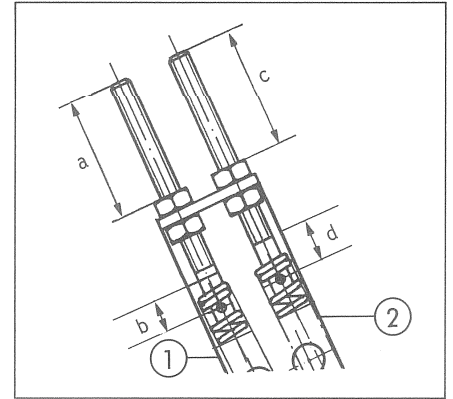


Fig. 3.5.7

$a = 20\text{mm}$
 $b = 6$ Federwindungen
 c = Die Feder [2] soll bei einem Drehwinkel von 35° einsetzen
 $d = 16$ Federwindungen

$a = 20\text{mm}$
 $b = 6$ coils of the spring
 c = The spring action should set with a deflection of 35°
 $d = 16$ coils of the spring

Schritt 1

Voreinstellung der Federn

Feder [2] vom Bolzen [13] aushängen. Die Positionen a, b und d einstellen. Die Zugkraft der Feder [1] nach den Werten in Fig. 3.5.8 kontrollieren und wenn nötig nachstellen (siehe Abschnitt 3.5.3).

Feder [2] wieder einhängen und Position C einstellen.

Die Zugkraft des ganzen Federsystems nach Fig. 3.5.8 kontrollieren und wenn nötig nachstellen (siehe Abschnitt 3.5.3).

Schritt 2

Durch Drehen der Dämpfungspumpe [15] siehe Fig. 3.5.6 wird die Dämpfung des Federsystems eingestellt. Die Bandzugwaage wird bis zu einem Drehwinkel von 60° ausgelenkt und dann losgelassen. Das Zurücklaufen in die Ruhestellung muss kontinuierlich und ohne Aufprellen auf den Endanschlag erfolgen. Nach erfolgreicher Einstellung Schraube der Dämpfungspumpe mit Sicherungslack sichern.

Step 1

Preadjusting the springs

Unhook spring (2) from pin (13). Adjust items a, b, and d. Check whether the tension of spring (1) corresponds to the values specified in Fig. 3.5.8 and readjust if necessary (refer to section 3.5.3).

Refasten spring (2) and adjust item c.

Check the tension of the entire spring system as specified in Fig. 3.5.8 and readjust if necessary (refer to section 3.5.3).

Step 2

The damping action of the spring system can be adjusted by rotating the dash pot (15) (see Fig. 3.5.6). Open tape tension sensor to a deflection of 60° and release it. The return travel to the neutral position should be smooth and the sensor should not bounce against the stop. Secure screw of the dash pot with glyptal after the necessary adjustments have been made.

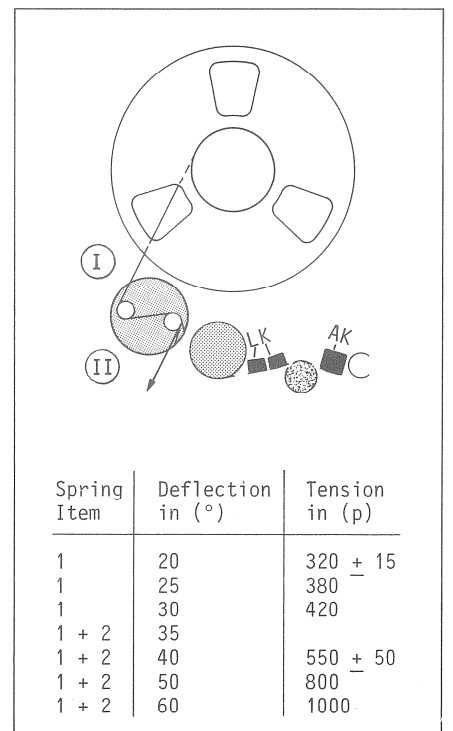


Fig. 3.5.8
Linkes Federsystem
Left-hand spring system

3.5.3
Einfluss der Position der Gewindestange
sowie der Federlänge auf die Charak-
teristik

3.5.3
Influence of the threaded rod position
and the spring length on the spring
characteristic

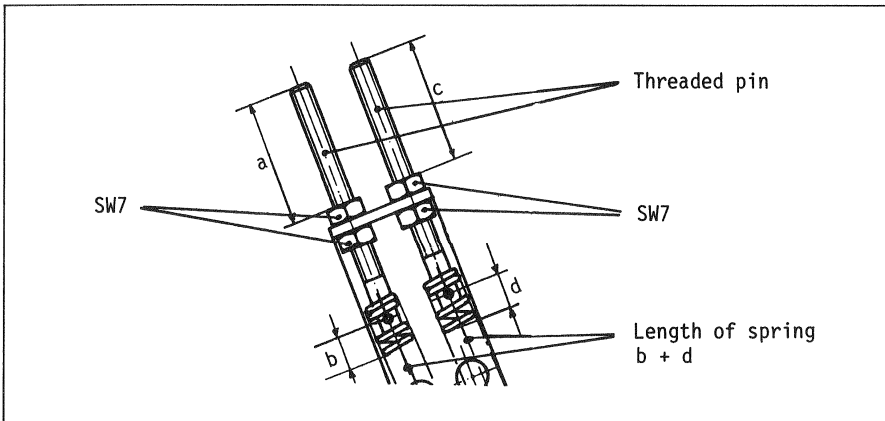


Fig. 3.5.9

Eine Verstellung der Gewindestange er-
gibt eine parallele Verschiebung der
eingestellten Federkraftkurve.

Adjustments to the threaded rod re-
sults in a parallel shift of the co-
responding spring tension curve.

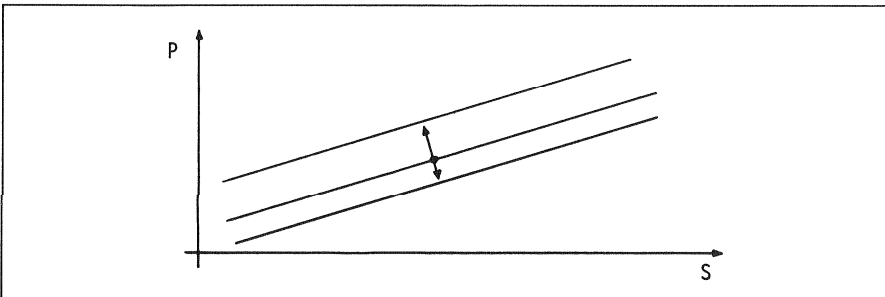


Fig. 3.5.10

Durch eine Verkürzung oder Verlängerung
der Feder b/d wird die Steilheit der
Federcharakteristik eingestellt:

The steepness of the spring characte-
ristic can be influenced by shortening
or elongating spring b/d :

längere Feder = flachere Charakteristik/ longer spring = flatter characterictic/
kürzere Feder = steilere Charakteristik shorter spring = steeper characterictic

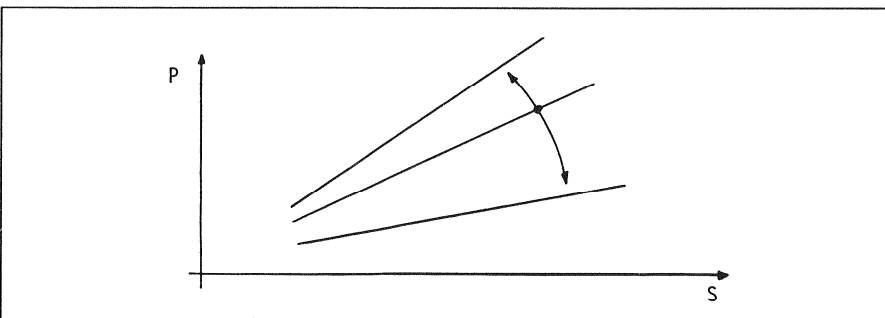


Fig. 3.5.11

3.5.4

Einstellung des BandzugesVoraussetzung:

Die Federsysteme müssen nach Abschnitt 3.5.2 richtig eingestellt sein.
Die Spannung an den Bandzugwaagenpotentiometern Abschnitt 3.5.1 und die Speisespannungen Kap. 3.1 müssen richtig eingestellt sein.

Hinweis:

Die Messungen werden mit einem Bandzugmessgerät (Tentelometer) ausgeführt.

Es soll zur Messung eine Spule mit 10" Durchmesser verwendet werden.

3.5.4

Adjusting the tape tensionPrerequisites:

The spring systems must be adjusted correctly as specified in section 3.5.2. The voltage at the tape tension potentiometers (section 3.5.1) and the supply voltages (section 3.1) must be adjusted correctly.

Note:

The following measurements are made with a tape torque meter (tentelometer).

A reel with a diameter of 10" should be used for the measurements.



Fig. 3.5.12

Band auflegen und bis Mitte Band vor-
spulen (Auf der Auf- und Abwickelspule
befindet sich jetzt gleichviel Band).

Einige Male die Tasten Play-Stop drük-
ken. Mit dem Tentelometer den Bandzug
auf der linken und rechten Seite mes-
sen und mit den Werten aus Fig. 3.5.14
vergleichen.

Falls die Bandzüge nicht in der Tole-
ranz der Werte liegen, kann durch Ver-
kürzen oder Verlängern von Abstand
[a] der korrekte Bandzug eingestellt
werden.

Mount tape and wind forward to the
middle of the tape (the take-up reel
and the reel should contain the same
amount of tape).

Press PLAY/STOP keys several times.
Measure the tape tension on the left-
hand and the right-hand side with the
aid of the tentelometer and compare
with the values specified in Fig.
3.5.14.

If the tape tensions do not fall with-
in the specified tolerances, the
correct tape tension can be adjusted
by shortening or increasing the dis-
tance (a).

Anmerkung:
Falls kein Tentelometer vorhanden ist, kann eine ungefähre Messung wie folgt durchgeführt werden:
Band auflegen und bis Mitte Band vor-
spulen.
Deckel von der Andruckrolle entfernen.
Maschine in Play starten.
Einen Sechskantschlüssel (3mm) in die
Mittelschraube der Andruckrolle stek-
ken. Mit diesem Sechskantschlüssel die
Andruckrolle von der Capstanachse so-
weit wegziehen, dass kein Bandtransport
durch den Capstan erfolgt.
Das Band wird jetzt nur noch von den
Wickelmotoren transportiert. Nach
ungefähr einer halben bis ganzen Um-
drehung der Aufwickelspule muss das
Band stoppen.

Note:
If no tentelometer is available, an
approximative measurement can be made
as follows:
Mount tape and spool forward to the
middle of tape. Remove cover of pres-
sure roller. Start the recorder in PLAY
mode.
Insert a hexagon-socket-screw key
(3mm) into the center screw of the
pressure roller. Use this key to pull
the pressure roller away from the cap-
stan shaft to the point where the cap-
stan no longer transports the tape.
The tape is now only transported by
the spooling motors.
The tape should stop after the take-up
reel has completed one half to one full
revolution.

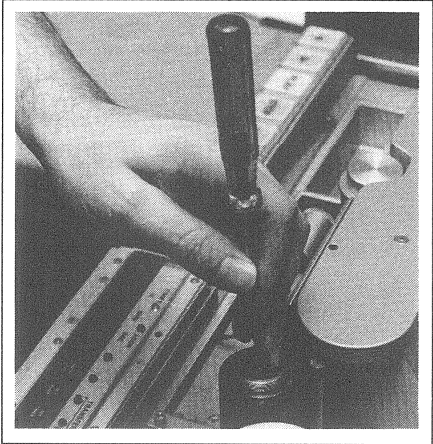


Fig. 3.5.13

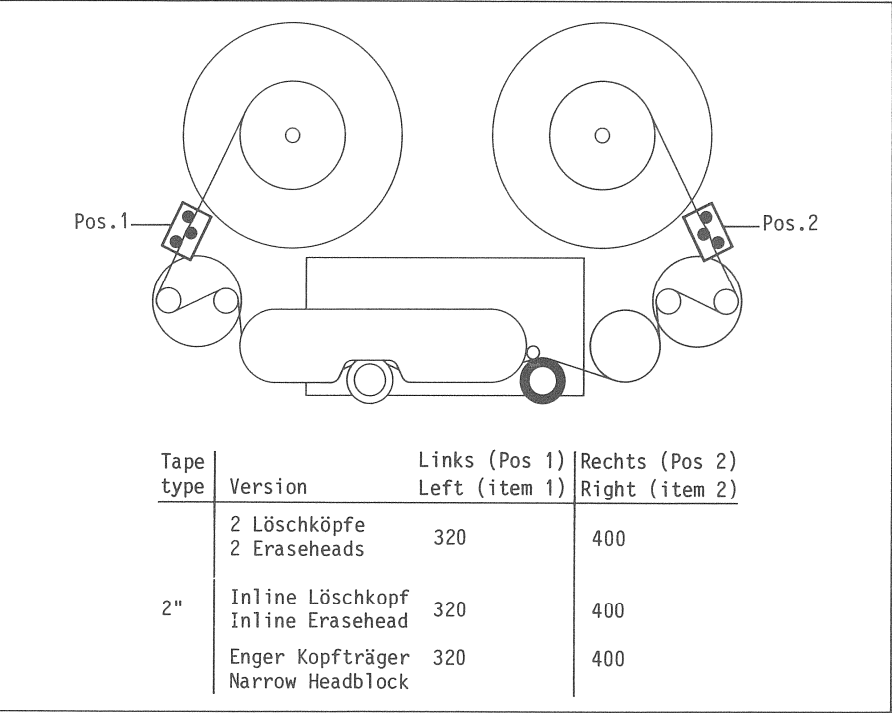


Fig. 3.5.14
Toleranz $\pm 10g$ exklusive Messgeräte-
toleranz

Fig. 3.5.14
Tolerance $\pm 10g$ exclusive tolerance of
the measuring equipment

3.5.5

Einstellung der elektrischen Bremsen

Nach dem Auslaufen des Bandes wird die jeweilige Aufwickelspule abgebremst. Der Einsatzzpunkt des Bremsvorganges ist auf dem Spooling Motor Control PCB 1.180.455 einstellbar.

Vorbereitung:

Beide Bremsen inaktivieren indem zwischen Laufwerkchassis und dem Hebel des Magnetankers ein Kunststoffquader eingeschoben wird (siehe Fig. 3.5.15).

3.5.5

Adjusting the electric brakes

When the end of the tape has been reached, the corresponding take-up reel is braked. The cut-in point of the braking action can be adjusted on the spooling motor control PCB 1.180.455.

Preparatory steps:

Disable both brakes by inserting a plastic cube between the tape transport chassis and the armature lever (see Fig. 3.5.15).

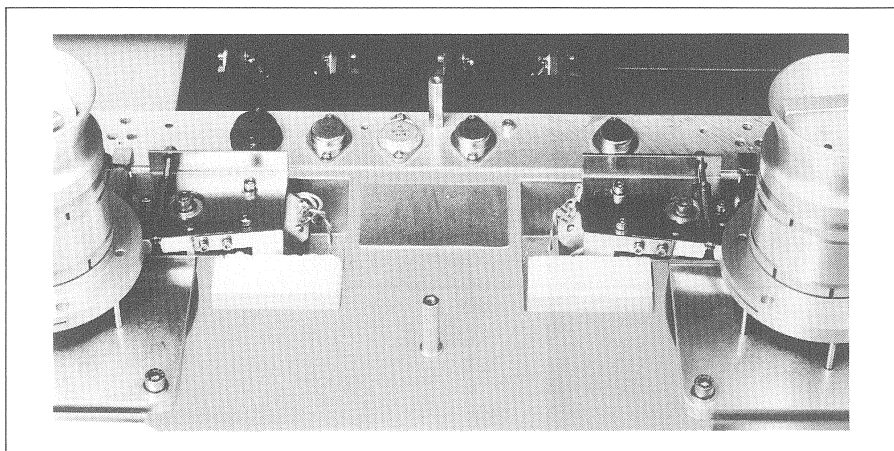


Fig. 3.5.15

Einstellvorgang:

Potentiometer R24 und R25 im Uhrzeigersinn bis zum Anschlag drehen.

Auf den rechten Wickelteller eine Leerspule 14" auflegen.
Taste Forward > oder Rewind < drücken, dabei mit der Hand die rechte Bandzugwaage soweit auslenken, dass die Leerspule auf die höchste Drehzahl beschleunigt wird.
Die Bandzugwaage loslassen; die Leerspule wird abgebremst, kommt aber nicht ganz zum Stillstand.
Mit Potentiometer R24 wird jetzt der Einsatzzpunkt des Bremsvorganges so eingestellt, dass die elektrische Bremse bis zum Stillstand der Leerspule wirksam bleibt.

Anmerkung:

Wird das Potentiometer R24 über den Einsatzzpunkt hinaus im Gegenuhrzeigersinn gedreht, ändert sich die Drehrichtung der Leerspule.

Ist die rechte Seite richtig eingestellt wird die Leerspule auf die linke Seite aufgelegt, und mit Potentiometer R25 der Einsatzzpunkt eingestellt.

Adjustment procedure:

Turn potentiometers R24 and R25 to the clockwise limit position.

Mount a 14" empty reel on the right-hand reel support. Press forward > or rewind < key and simultaneously open the right-hand tape tension sensor by hand to such a point that the empty reel is accelerated to maximum speed. Release tape tension sensor; the empty reel is braked, but does not come to a standstill.
The cut-in point of the braking action can be adjusted with potentiometer R24 in such a manner that the braking action remains in effect until the empty reel comes to a full stop.

Note:

If potentiometer R24 is turned counterclockwise beyond the cut-in point, the rotation direction of the empty spool will be reversed.

After the right-hand side has been adjusted correctly, mount the blank reel on the left-hand side and adjust the cut-in point with potentiometer R25.

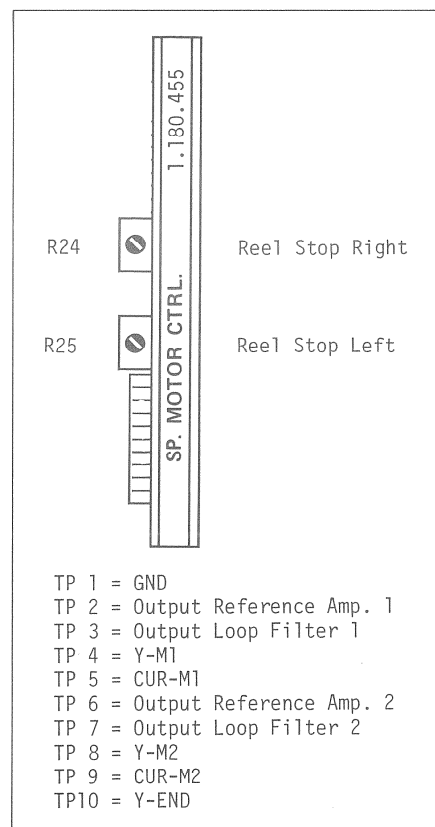


Fig. 3.5.16

455

3.5.6 Einstellung der Bandzugwaagen-End- schalter

Achtung:

Bei zu starkem Fremdlicht arbeitet der
Endschalter nicht korrekt.

In Ruhestellung der Bandzugwaage muss
die Schaltfahne [1] ganz in die Licht-
schränke [2] eintauchen (siehe Fig.
3.5.17).
Ist dies nicht der Fall, Schaltfahne
durch Lösen der Befestigungsschrauben
justieren.

3.5.6 Adjusting the tape tension sensor li- mit switches

Caution:

This light-barrier tape limit switch
does not operate correctly if the
ambient light is too bright.

When the tape tension sensor is in
its neutral position, the switch lug
(1) should be plugged all the way in-
to the light barrier (2) (see Fig.
3.5.17).
Should this not be the case, adjust
switch lug by loosening the mounting
screws.

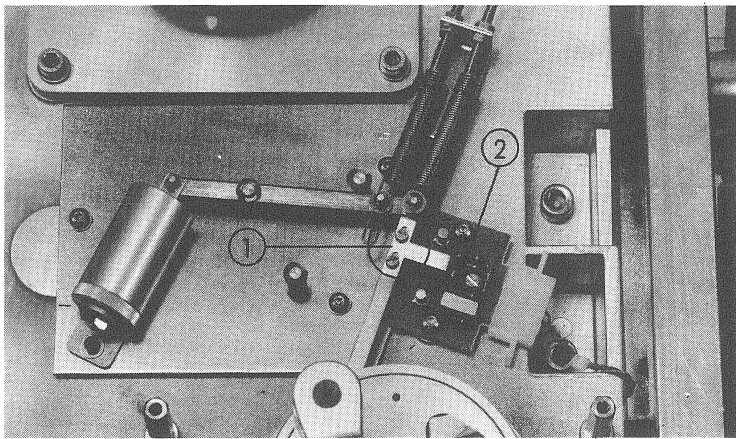


Fig. 3.5.17

Die Bandzugwaage etwa 30° auslenken.
Die Stoplampe muss jetzt konstant
leuchten.
Die Bandzugwaage langsam gegen die
Ruhestellung bewegen. Bei etwa 5°
Auslenkung muss die Stoplampe zu blin-
ken beginnen.
Die Einstellung ist für beide Bandzug-
waagen-Endschalter gleich.

Open tape tension sensor to a deflec-
tion of approx. 30°. The stop lamp
should now be on continuously.
Slowly release tape tension sensor
against its neutral position. When
the deflection is approx. 5°, the
stop lamp should start to flash.
The adjustments are identical for both
tape tension sensor limit switches.

3.5.7Kontrolle der Wickelmotor-SteuerungSchritt 1Maschine einschalten

Taste Forward > drücken;

Die linke Bandzugwaage von Hand auslenken. Bei einem Drehwinkel von ca. 25-30° ändert der linke Wickelmotor seine Drehrichtung.

Taste Forward > drücken;

Die rechte Bandzugwaage von Hand auslenken. Bei einem Drehwinkel von 55-65° ändert der rechte Wickelmotor seine Drehrichtung.

Taste Rewind < drücken;

Die linke Bandzugwaage von Hand auslenken. Bei einem Drehwinkel von ca. 55-65° ändert der linke Wickelmotor seine Drehrichtung.

Taste Rewind < drücken;

Die rechte Bandzugwaage von Hand auslenken. Bei einem Drehwinkel von ca. 20-25° ändert der rechte Wickelmotor seine Drehrichtung.

Diese Angaben sind nur gültig bei richtig eingestellter Bandzugregelung.

Schritt 2Kontrolle der Spannungsüberwachung:

Maschine einschalten, Band auflegen
Stoplampe leuchtet.
Eine Sicherung (20A) aus dem Spooling-motor Power Supply heraus-schrauben.
Sobald nun die Spannung unter einem gewissen Wert gefallen ist, blinkt die Stoplampe.
Keine Laufwerkfunktion kann ausgeführt werden.
Die Sicherung (20A) wieder einsetzen.
Die Maschine ausschalten und nach ca. 1 Sekunde wieder einschalten.
Stoplampe leuchtet.

3.5.7Checking the spooling motor controlStep 1Switch recorder on.

Press forward > button:

Open the left-hand tape tension sensor by hand. With a deflection angle of 25-30°, the left-hand spooling motor reverses its running direction.

Press forward > button:

Open the right-hand tape tension sensor by hand. With a deflection angle of approx. 55-65°, the right-hand spooling motor reverses its running direction.

Press rewind < button:

Open the left-hand tape tension sensor by hand. With a deflection angle of approx. 55-65° the left-hand spooling motor reverses its running direction.

Press rewind < button:

Open the right-hand tape tension sensor by hand. With a deflection angle of approx. 20-25° the right-hand spooling motor reverses its running direction.

The specifications are only valid if the tape tension sensor has been adjusted correctly.

Step 2Checking the voltage monitoring:

Switch recorder on; mount tape; stop lamp turns on. Unscrew one fuse (20A) from the spooling motor supply. As soon the voltage drops below a certain value, the stop lamp starts to flash. None of the tape transport functions can be performed. Reinstall the fuse (20A). Switch recorder off and back on again after a delay of approx. 1 second.
Stop lamp turns on.

455

Schritt 3

Kontrolle der Bandschutzschaltung:

Diese Schaltung verhindert bei einem Defekt eines Leistungstransistors unkontrolliertes Arbeiten der Wickel-motoren.

Maschine einschalten, Band auflegen und in PLAY starten.
Emitter und Kollektor (Gehäuse) eines der vier in Fig. 3.5.18 markierten Leistungstransistoren mit einem Widerstand von $1\ \Omega$ (min 9 W) verbinden.
Der Bandtransport kommt sofort zum Stillstand und die Stoplampe blinkt.

Kurzschlusswiderstand entfernen.
Die Maschine ausschalten und nach ca. 1 Sekunde wieder einschalten.
Die Stoplampe leuchtet.

Wie Fig. 3.5.18 zeigt, ist dieser Vorgang viermal durchzuführen, um die ganze Schaltung zu prüfen.
Schritt 3 wird dabei immer wiederholt.

Step 3

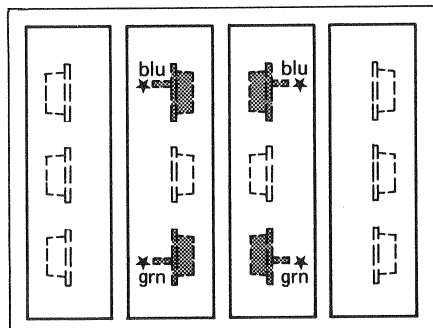
Checking the tape protect circuit:

This circuit inhibits uncontrolled operations of the spooling motors in the event of a power transistor failure.

Switch recorder on; mount tape; start in PLAY mode.
Connect emitter and collector (housing) of one of the four power transistors marked in Fig. 3.5.18 by a resistor of $1\ \Omega$ (9 W min.).
The tape transport should come to an immediate stop and the stop lamp flashes.
Remove short-circuit resistor.
Switch recorder off and on again after a delay of approx. 1 second.
The stop lamp turns on.

As shown in Fig. 3.5.18, this procedure is to be executed four times to check the entire circuit.
Step 3 has therefore to be repeated.

Rear view of power unit 1.180.500 with power transistors to be short circuited



★ Colour of emitter wire

Short-circuit between emitter and collector (housing)
(Top view of power unit)

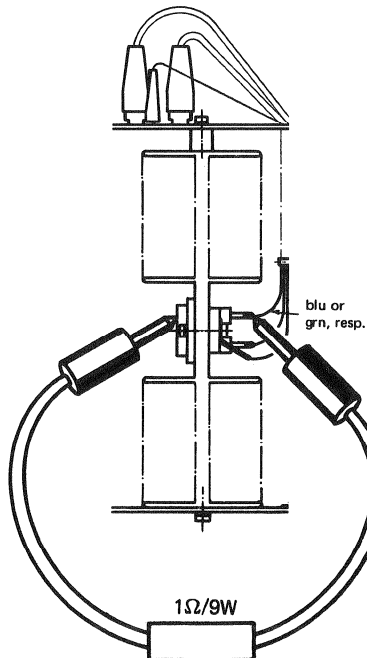


Fig. 3.5.18

3.6 Einstellung der Bandzugregelung mit Spoolingmotor Ctrl. 1.180.457 GR30 EL6

Bestehend aus:

1 Sp. Motor Ctrl. 1.180.457
1 Spooling Motor Power Unit 1.180.501
1 Spooling Motor Power Supply
1.180.321
1 MPU2 6800 1.180.484

1 Federsystem mit Dämpfungspumpe

1.180.220 links 2"
1.180.221 rechts 2"
oder
1.180.210 links 1"
1.180.211 rechts 1"

Übersicht über die Einstellvorgänge

3.6.1 Einstellung der Bandzugwaage

3.6.2 Einstellung von Federn und Dämpfungspumpe 1" und 2"

3.6.3 Einflussparameter für die Band- zugwaageeneinstellung

3.6.4 Einstellung des Bandzuges 1" und 2"

3.6.5 Einstellung der Bandwaagen- Endschalter

3.6.6 Kontrolle der Wickelmotor- Steuerung

3.6 Adjusting the tape tension on machines equipped with spooling motor control 1.180.457 GR30 EL6

Comprising:

1 Spooling motor control 1.180.457
1 Spooling motor power unit 1.180.501
1 Spooling motor power supply 1.180.321
1 MPU2 6800 1.180.484

1 Spring system with dash pot

1.180.220 left-hand 2"
1.180.221 right-hand 2"
or
1.180.210 left-hand 1"
1.180.211 right-hand 1"

Summary of adjustment procedures

3.6.1 Adjusting the tape tension sen- sor

3.6.2 Adjusting the spring and the dash pot 1" and 2"

3.6.3 Parameters for adjusting the tape tension sensor

3.6.4 Adjusting the tape tension 1" and 2"

3.6.5 Adjusting the limit switches of the tape tension sensor

3.6.6 Checking the spooling motor control

HINWEIS:

Kapitel 3.6 enthält alle Einstel-
lungen im Zusammenhang mit der
Spooling motor control 1.180.457.
Um Verwechslungen mit dem vorange-
henden Kapitel 3.5 zu vermeiden, ist
auf jeder Seite dieses Kapitels
am oberen Seitenrand das folgende
Zeichen abgedruckt:

457

Um die Einstellungen für die 1"
und die 2" Version auseinanderzu-
halten sind bei den entsprechenden
Abschnitten noch folgende Zeichen
zu finden:

1"

2"

NOTE:

Section 3.6 treats all tape ten-
sion adjustments in connection
with spooling motor control
1.180.457. To avoid confusion
with the precedent section 3.5
you find the subsequent symbol on
top of every page of this section:

457

Two other symbols are used to dis-
tinguish the adjustments for 1" and
2" versions:

1"

2"

3.6.1 Einstellung der Bandzugwaage

Schritt 1

Die Senkschraube [1] lösen und den
Rollenteller abheben.
Sechskantmuttern der drei Stiftschrau-
ben [3] lösen.
Den Hebelflansch [2] von Hand nieder-
drücken und die drei Stiftschrauben
[3] im Uhrzeigersinn vorsichtig drehen
bis die Ankerscheibe [4] gleichmässig
auf der Magnetglocke [5] aufliegt.
Die drei Stiftschrauben [3] wieder je
um 1/5 Drehung im Gegenuhrzeigersinn
lösen, damit sich ein Luftspalt von
0,1-0,15mm zwischen Ankerscheibe und
Magnetglocke ergibt.

3.6.1 Adjusting the tape tension sensor

Step 1

Loosen countersunk-head screw (1) and
lift off roller plate.
Loosen hexagon nuts of the three set
screws (3).
Press lever flange (2) down by hand
and carefully rotate the three set
screws (3) in the clockwise direction
until the armature disk (4) rests even-
ly on the magnet bell (5). Now turn set
screws (3) back in the counterclockwise
direction by 1/5 of a turn so that an
airgap of 0.1-0.15 mm is obtained be-
tween the armature disk and the magnet
bell.

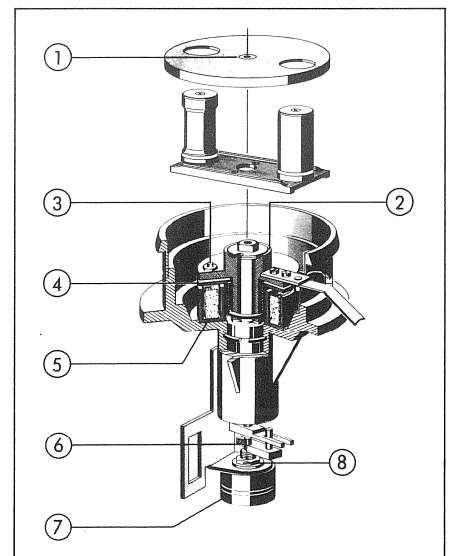


Fig. 3.6.1

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Gerät einschalten und durch wechselweises Drücken der Tasten STOP und EDIT das korrekte Blockieren und Lüften der Magnete prüfen.
Stiftschrauben in ihrer Position festhalten und Muttern festziehen.
Rollenteller wieder montieren und vor dem Festziehen der Schraube [1] die Potentiometerkupplung [6] gegen die Bandzugwaagen-Ruhestellung drücken.
Kontrolle EDIT-STOP wiederholen.

Kontrolle:

Die Bandzugwaage von Hand bis zu einem Drehwinkel von etwa 60° auslenken, dann die Taste EDIT drücken. Die Bandzugwaage muss dabei blockieren, und darf nicht durch die Federkraft des Feder-systemes in die Ruheposition zurücklaufen.

Schritt 2

Vor dem Einstellen des Bandzugwaagenpotentiometers die Speisespannung (+12.0V und -12.0V) prüfen.

Gravierte Bandzugwaagendeckel montieren und vor dem Festziehen der Schraube [1] die Potentiometerkupplung [6] gegen die Bandzugwaagen-Ruhestellung drücken.

Potentiometer R44, R53 auf Spooling Motor Control 1.180.457 auf Mittelposition stellen.

Voltmeter am Mittelabgriff [7] des Bandzugwaagenpotentiometers gegen Masse TP1 Sp. Motor Ctrl. 1.180.457.

Litzenanschlüsse der Potentiometer-Mittelabgriffe:

Links (GR12) Farbe braun
Rechts (GR13) Farbe rot

Mutter [8] ein wenig lösen.

Bandzugwaage von Hand bis zu einem Drehwinkel von 30° auslenken, dann die Taste EDIT drücken. Die Bandzugwaage bleibt in dieser Stellung blockiert. Durch Drehen des Bandzugwaagenpotentiometers eine Spannung von 0.0V ± 50mV einstellen.

Mutter [8] festziehen.

Schritt 2 zur Einstellung an der zweiten Bandzugwaage wiederholen.

Switch recorder on and check for correct blocking and lifting of the magnets by alternately pressing the STOP and the EDIT key.

Retain set screw in their present position and tighten nuts.

Reinstall roller plate and press potentiometer coupling (6) against the neutral position of the tape tension sensor before retightening screw (1).
Repeat EDIT-STOP check.

Check:

Open the tape tension sensor by hand to a deflection of approximately 60°, then press EDIT button. The tape tension sensor should block, i.e. it should not return to its neutral position on account of the spring tension.

Step 2

Check the supply voltage (+12.0 V and -12.0 V) before making any adjustments to the potentiometer of the tape tension sensor.

Mount engraved tape tension sensor covers and press potentiometer coupling (6) against neutral position of tape tension sensor before tightening screw (1).

Set potmeter R44, R53 on spooling motor control 1.180.457 to middle position.

Connect voltmeter to wiper terminal (7) of the tape tension potentiometer and against ground TP1 spooling motor control 1-180-457.

Stranded leads of the wiper terminal:

Left-hand (GR12) color: brown
Right-hand (GR13) color: red

Loosen nut (8) lightly.

Open tape tension sensor by hand to a deflection of 30° and press EDIT button. The tape tension sensor remains blocked in this position. Adjust for 0.0 V ± 50mV by turning the tape tension sensor potentiometer.

Retighten nut (8).

Repeat step 2 to adjust the second tape tension sensor.

Schritt 3

Beide Bandzugwaagen um 30° auslenken.
 Voltmeter an TP2 auf Spooling Motor
 Control anschliessen (Masse TP1).
 Mit Potentiometer R53 auf + 0,0V
 ± 20mV abgleichen.
 Voltmeter am TP12 auf Spooling Motor
 Control anschliessen (Masse TP1).
 Mit Potentiometer R44 auf + 0,0V
 ± 20mV abgleichen.

Prüfe:

Die Spannung beträgt etwa +2,0V in der
 Bandzugwaagen-Ruhestellung (Mittelab-
 griff des Bandzugwaagenpotentiometers).

Gravierte Bandzugwaagendeckel ausbauen
 und normale Bandzugwaagendeckel mon-
 tieren und vor dem Festziehen der
 Schraube [1] (siehe Fig. 3.6.1) die
 Potentiometerkupplung [6] gegen die
 Bandzugwaagen-Ruhestellung drücken.

Step 3

Deflect both tape tension sensors to
 an angle of 30°.
 Connect voltmeter to TP2 on spooling
 motor control (ground TP1). Adjust for
 +0.0V ±20mV with potentiometer R53.
 Connect voltmeter to TP12 on spooling
 Motor control (ground TP1). Adjust for
 0.0V ±20mV with potentiometer R44.

Check:

With the tape tension sensor in its
 neutral position, the voltage should
 be +2.0V (middle tap of the tape ten-
 sion sensor potmeter).

Remove engraved tape tension sensor
 covers. Reinstall standard covers and
 press potentiometer coupling (6)
 against the neutral position of the
 tape tension sensor before retighten-
 ing screw (1) (see Fig. 3.6.1).

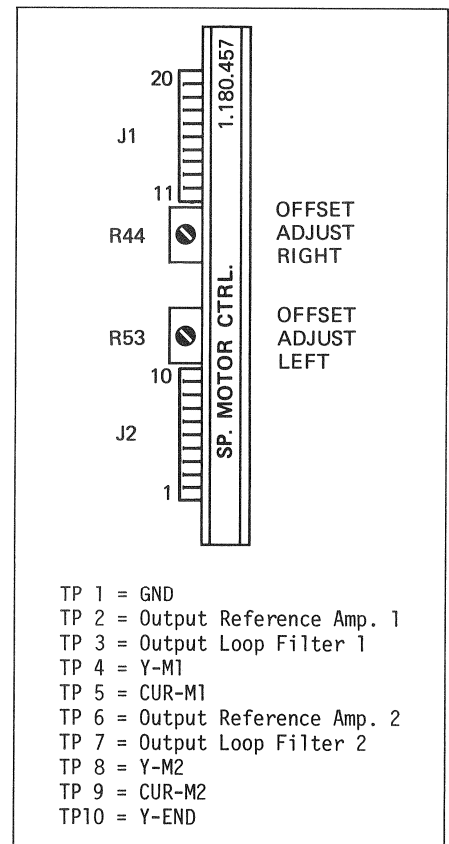


Fig. 3.6.2

457

3.6.2

Einstellung von Federn und Dämpfungs-
pumpeVorbereitungen:

- Maschine ausschalten
- Bandzugwaagendeckel entfernen
- Gravierte Bandzugwaagendeckel montieren und vor dem Festziehen der Schraube [1] die Potentiometerkuppelung [6] gegen die Bandzugwaagen-Ruhestellung drücken (siehe Fig. 3.6.1).
- In der Bandzugwaagen-Ruhestellung den Nullpunkt des gravierten Bandwaagendeckels mit einem weichen Bleistift auf den Flanschring übertragen.
- Dämpfungspumpe auf minimale Dämpfung einstellen.

Erforderliche Messgeräte:

- Federwaage 500g
- Federwaage 2kg
- Massstab
- Leerspule; Bandstück mit einer kleinen Schlaufe am Ende (zum Einhängen der Federwaage) Länge ca. 2-3m
- Allgemeine Werkzeuge
- Gravierte Bandzugwaagendeckel
 - 1" : Nr. 10.010.002.05
 - 2" : Nr. 10.010.002.07

Hinweis:

Bei allen Messungen mit der Federwaage müssen die Bandabschnitte I und II parallel laufen, um Fehlmessungen zu vermeiden.

3.6.2

Adjusting the springs and the dash potPreparatory steps

- Switch recorder off
- Remove covers of tape tension sensor
- Install engraved tape tension sensor covers and press potentiometer coupling (6) against neutral position of tape tension sensor before securing screw (1) (see Fig. 3.6.1).
- With tape tension sensor in its neutral position transfer the zero of the engraved tape tension sensor cover to the flange ring with the aid of a soft pencil.
- Adjust dash pot for minimum damping action.

Required measuring tools:

- Spring balance 500g
- Spring balance 2kg
- Ruler
- Empty reel; tape section with a small loop at one end (for hooking into the spring balance) length approx. 2-3m
- Tools as required
- Engraved tape tension sensor covers
 - 1" : No. 10.010.002.05
 - 2" : No. 10.010.002.07

Note:

To ensure that the measurements taken with the spring balance are correct, both sections I and II must run in parallel.

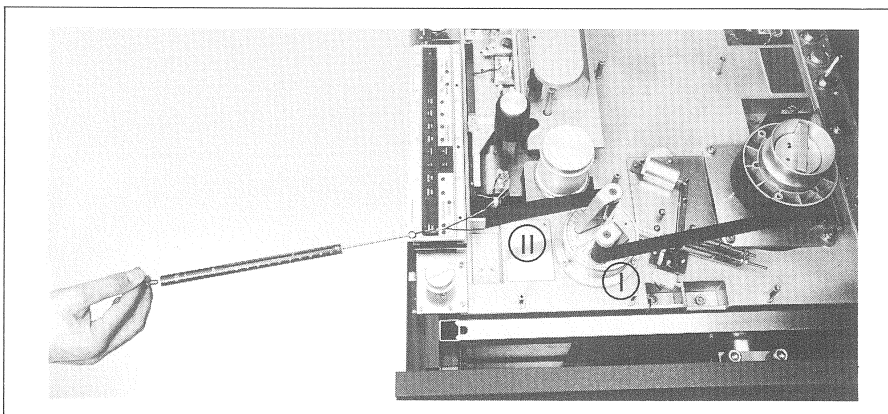


Fig. 3.6.3

Rechtes Federsystem 1"

Right-hand spring system 1"

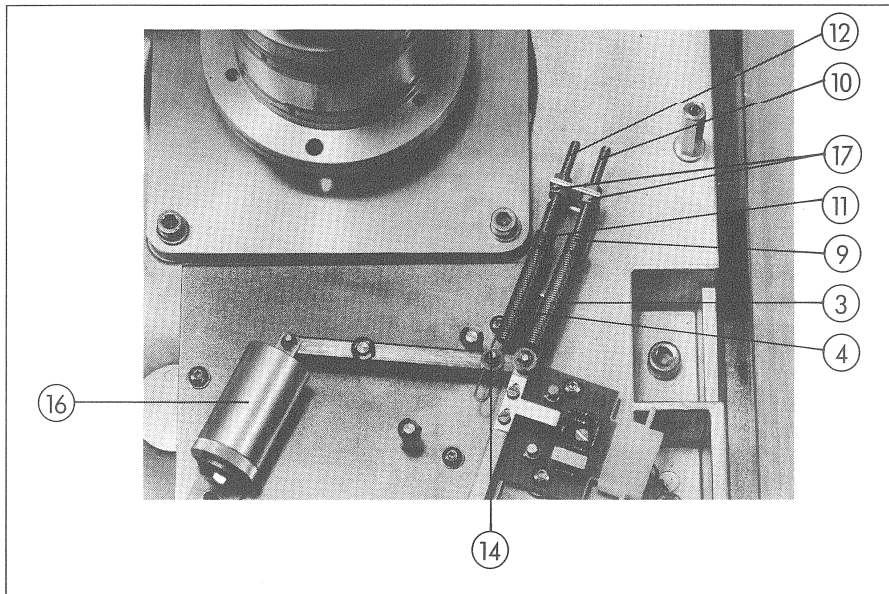


Fig. 3.6.4

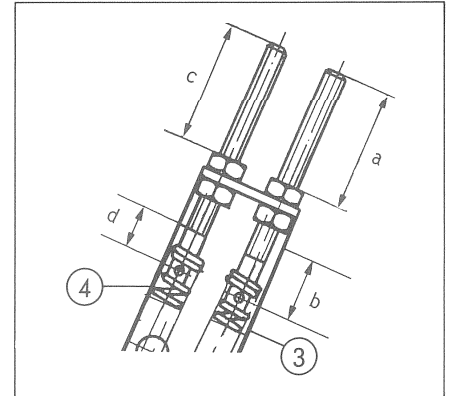


Fig. 3.6.5

a = 24mm
 b = 3 Federwindungen
 c = Die Feder [4] soll bei einem Drehwinkel von 35° einsetzen.
 d = 11 Federwindungen

a = 24mm
 b = 3 coils of the spring
 c = The spring action (4) should set in with a deflection of 35°.
 d = 11 coils of the spring

Schritt 1

Voreinstellung der Federn

Feder [4] vom Bolzen [14] aushängen. Position a, b und d einstellen. Die Zugkraft der Feder [3] nach den Werten in Fig. 3.6.6 kontrollieren und wenn nötig nachstellen (siehe Abschnitt 3.6.3).

Feder [4] wieder einhängen und Position C einstellen. Die Zugkraft des ganzen Federsystems nach Fig. 3.6.6 kontrollieren und wenn nötig nachstellen (siehe Abschnitt 3.6.3).

Schritt 2

Durch Drehen der Dämpfungspumpe [16] wird die Dämpfung des Federsystems eingestellt.

Die Bandzugwaage wird bis zu einem Drehwinkel von 60° ausgelenkt und dann losgelassen. Das Zurücklaufen in die Ruhestellung muss kontinuierlich und ohne Aufprellen auf den Endanschlag erfolgen.

Nach erfolgter Einstellung Schraube der Dämpfungspumpe mit Sicherungslack sichern.

Step 1:

Preadjusting the springs

Unhook spring (4) from pin (14). Adjust items a, b, and d. Check whether the tension of spring (3) corresponds to the value specified in Fig. 3.6.6 and readjust if necessary (refer to section 3.6.3).

Refasten spring (4) and adjust item c. Check tension of the entire spring system as specified in Fig. 3.6.6 and readjust if necessary (refer to section 3.6.3).

Step 2

The damping action of the spring system can be adjusted by rotating the dash pot (16).

Open tape tension sensor to a deflection of 60° and then release it. The return travel to the neutral position should be smooth and the sensor should not bounce against the stop. Secure screw of the dash pot with glyptal after the necessary adjustments have been made.

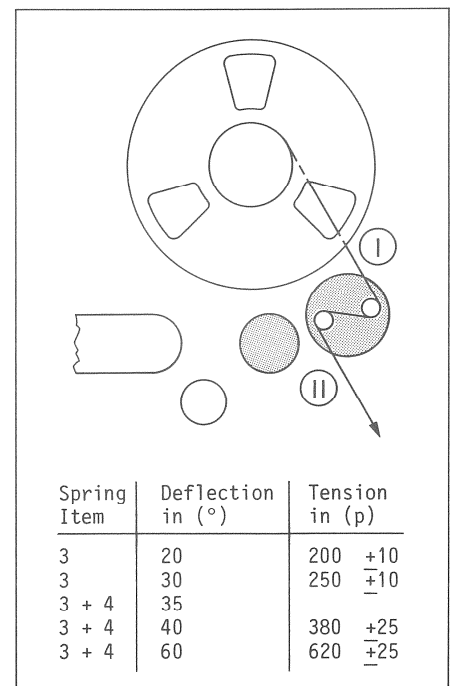


Fig. 3.6.6

Rechtes Federsystem

Right-hand spring system

457

1"

Linkes Federsystem 1"

Left-hand spring system 1"

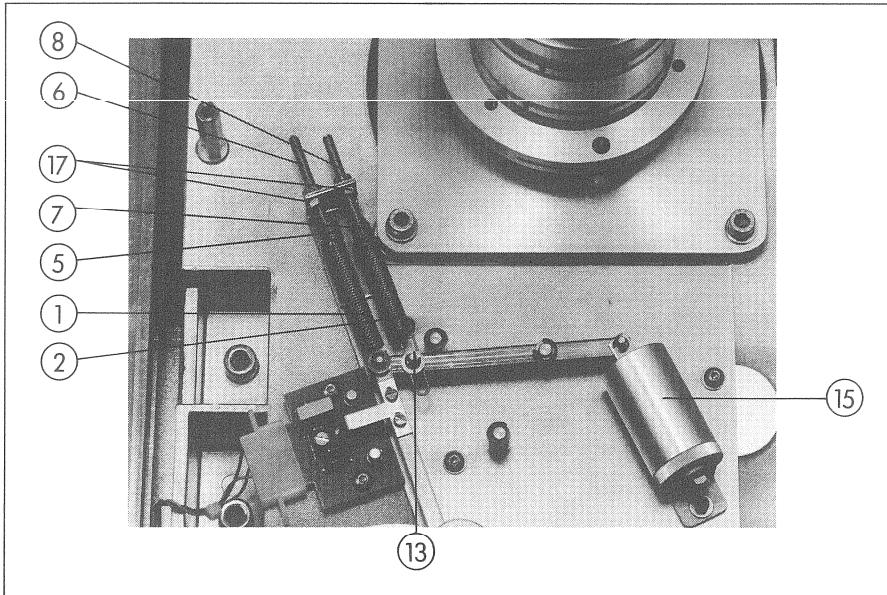


Fig. 3.6.7

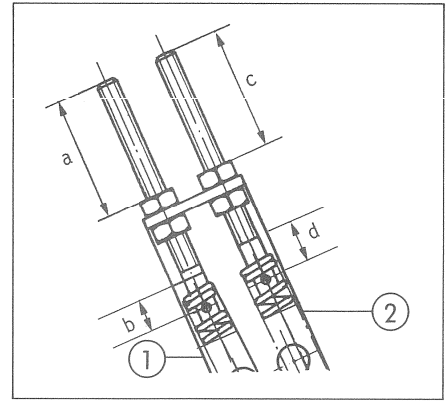


Fig. 3.6.8

$a = 24\text{mm}$
 $b = 3 \text{ Federwindungen}$
 $c = \text{Die Feder [2] soll bei einem Drehwinkel von } 35^\circ \text{ einsetzen.}$
 $d = 11 \text{ Federwindungen}$

$a = 24\text{mm}$
 $b = 3 \text{ coils of the spring}$
 $c = \text{The spring action (2) should set in with a deflection of } 35^\circ.$
 $d = 11 \text{ coils of the spring}$

Schritt 1

Voreinstellung der Federn

Feder [2] vom Bolzen [13] aushängen. Die Position a, b und d einstellen. Die Zugkraft der Feder [1] nach Fig. 3.6.9 kontrollieren und wenn nötig nachstellen (siehe Abschnitt 3.6.3).

Feder [2] wieder einhängen und Position c einstellen. Die Zugkraft des ganzen Federsystems nach Fig. 3.6.9 kontrollieren und wenn nötig nachstellen (siehe Abschnitt 3.6.3).

Schritt 2
Durch Drehen der Dämpfungspumpe [15] wird die Dämpfung des Federsystems eingestellt. Die Bandzugwaage wird bis zu einem Drehwinkel von 60° ausgelenkt und dann losgelassen. Das Zurücklaufen in die Ruhestellung muss kontinuierlich und ohne Aufprellen auf den Endanschlag erfolgen. Nach erfolgter Einstellung, Schraube der Dämpfungspumpe mit Sicherungslack sichern.

Step 1

Preadjustment of springs

Unhook spring (2) from pin (13). Adjust items a, b, and d. Check whether the tension of spring (1) corresponds to the values specified in Fig. 3.6.9 and readjust if necessary (refer to section 3.6.3).

Refasten spring (2) and adjust item c. Check the tension of the entire spring system as specified in Fig. 3.5.8 and readjust if necessary (refer to section 3.6.3).

Step 2
The damping action of the spring system can be adjusted by rotating the dash pot (15). Open tape tension sensor to a deflection of 60° and then release it. The return travel to the neutral position should be smooth and the sensor should not bounce against the stop. Secure the dash pot with glyptal after the necessary adjustments have been made.

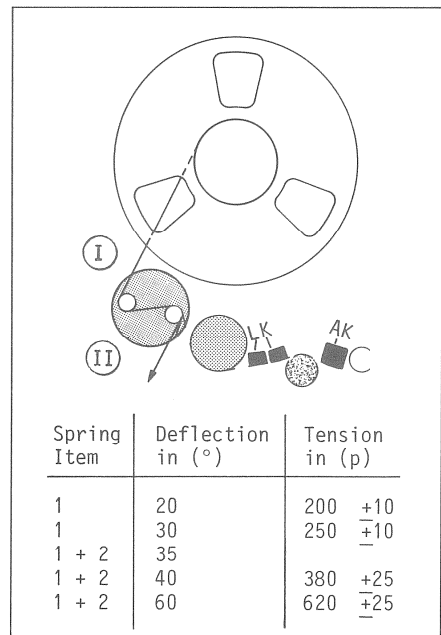


Fig. 3.6.9
Linkes Federsystem 1"
Left-hand spring system 1"

Rechtes Federsystem 2"

Right-hand spring system 2"

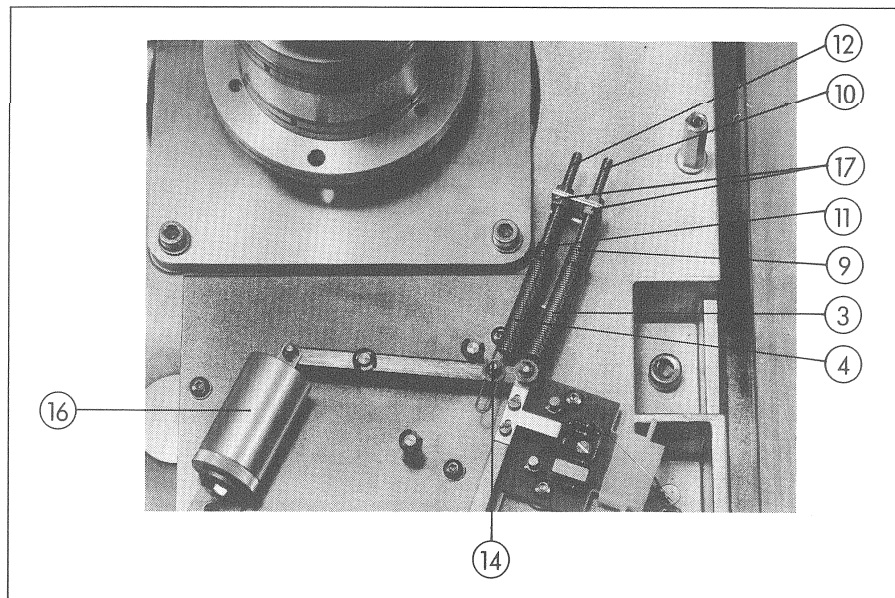


Fig. 3.6.10

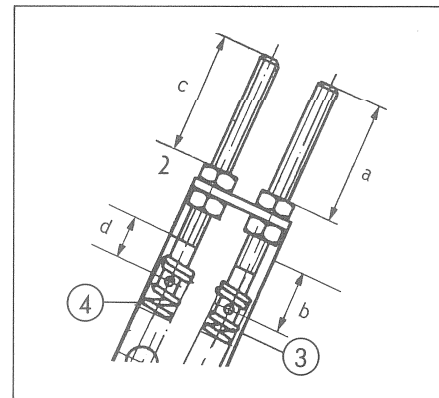


Fig. 3.6.11

a = 24mm
 b = 5 Federwindungen
 c = Die Feder [4] soll bei einem Drehwinkel von $35^\circ \pm 1^\circ$ einsetzen.
 d = 14 Federwindungen

a = 24mm
 b = 5 coils of the spring
 c = The spring action (4) should set in with a deflection of $35^\circ \pm 1^\circ$.
 d = 14 coils of the spring

Schritt 1

Voreinstellung der Federn

Feder [4] vom Bolzen [14] aushängen. Position a, b und d einstellen. Die Zugkraft der Feder [3] nach den Werten in Fig. 3.6.12 kontrollieren und wenn nötig nachstellen (siehe Abschnitt 3.6.3).

Feder [4] wieder einhängen und Position c einstellen. Die Zugkraft des ganzen Federsystems nach Fig. 3.6.12 kontrollieren und wenn nötig nachstellen (siehe Abschnitt 3.6.3).

Schritt 2

Durch Drehen der Dämpfungspumpe [16] wird die Dämpfung des Federsystems eingestellt.

Die Bandzugwaage wird bis zu einem Drehwinkel von (60°) ausgelenkt und dann losgelassen. Das Zurücklaufen in die Ruhestellung muss kontinuierlich und ohne Aufprellen auf den Endanschlag erfolgen.

Nach erfolgter Einstellung Schraube der Dämpfungspumpe mit Sicherungslack sichern.

Step 1

Preadjusting the springs

Unhook spring (4) from pin (14). Adjust items a, b, and d. Check whether the tension of spring (3) corresponds to the value specified in Fig. 3.6.12 and readjust if necessary (refer to section 3.6.3).

Refasten spring (4) and adjust item c. Check tension of entire spring system as specified in Fig. 3.6.12 and readjust if necessary (refer to section 3.6.3).

Step 2

The damping action of the spring system can be adjusted by rotating the dash pot (16).

Open tape tension sensor to a deflection of 60° and then release it. The return travel to the neutral position should be smooth and the sensor should not bounce against the stop., Secure screw of the dash pot with glyptal after the necessary adjustments have been made.

Spring Item	Deflection in ($^\circ$)	Tension in (p)
3	20	320 ± 10
3	30	420 ± 10
3 + 4	35	
3 + 4	40	580 ± 25
3 + 4	60	900 ± 25

Fig. 3.6.12
 Rechtes Federsystem 2"
 Right-hand spring system 2"

457

2"

Linkes Federsystem 2"

Left-hand spring system 2"

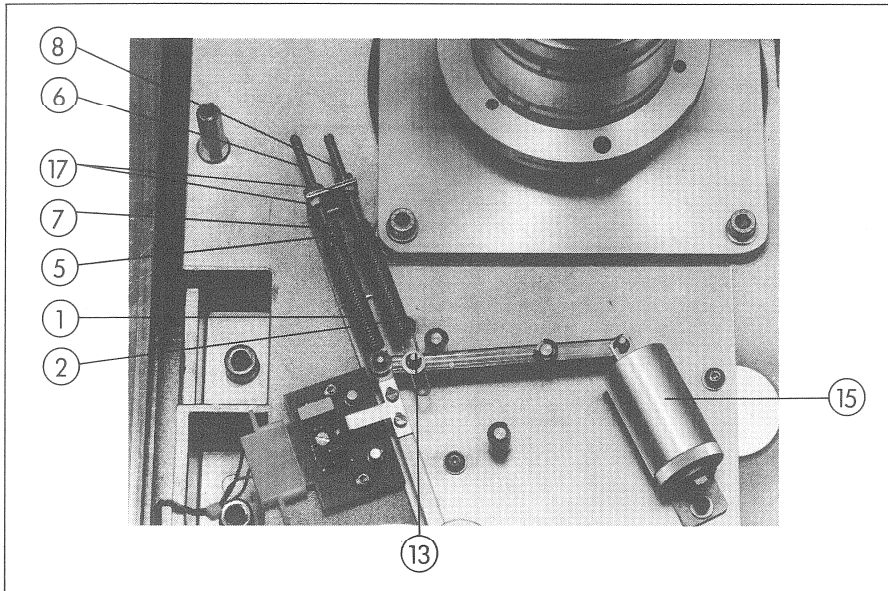


Fig. 3.6.13

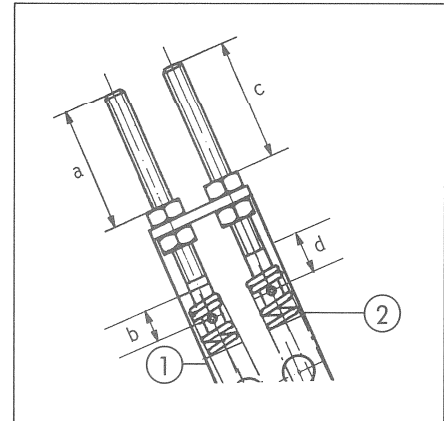


Fig. 3.6.14

a = 24mm
 b = 5 Federwindungen
 c = Die Feder [2] soll bei einem Drehwinkel von 35° einsetzen. $\pm 1^\circ$
 d = 14 Federwindungen

a = 24mm
 b = 5 coils of the spring
 c = The spring action (2) should set in with a deflection of $35^\circ \pm 1^\circ$.
 d = 14 coils of the spring

Schritt 1

Voreinstellung der Federn

Feder [2] vom Bolzen [13] aushängen. Die Positionen a, b und d einstellen. Die Zugkraft der Feder [1] nach den Werten in Fig. 3.6.15 kontrollieren und wenn nötig nachstellen (siehe Abschnitt 3.6.3).

Feder [2] wieder einhängen und Position c einstellen. Die Zugkraft des ganzen Federsystems nach Fig. 3.6.15 kontrollieren und wenn nötig nachstellen (siehe Abschnitt 3.6.3).

Schritt 2

Durch Drehen der Dämpfungspumpe [15] wird die Dämpfung des Federsystems eingestellt. Die Bandzugwaage wird bis zu einem Drehwinkel von 60° ausgelenkt und dann losgelassen. Das Zurücklaufen in die Ruhestellung muss kontinuierlich und ohne Aufprellen auf den Endanschlag erfolgen. Nach erfolgter Einstellung Schraube der Dämpfungspumpe mit Sicherungslack sichern.

Step 1

Preadjusting the spring

Unhook spring (2) from pin (13). Adjust items a, b, and d. Check whether the tension of spring (1) corresponds to the values specified in Fig. 3.6.15 and readjust if necessary (refer to section 3.6.3).

Refasten tension of the entire spring system as specified in Fig. 3.6.15 and readjust if necessary (refer to section 3.6.3).

Step 2

The damping action of the spring system can be adjusted by rotating the dash pot (15). Open tape tension sensor to a deflection of 60° and then release it. The return travel to the neutral position should be smooth and the sensor should not bounce against the stop. Secure the screw of the dash pot with glyptal after the necessary adjustments have been made.

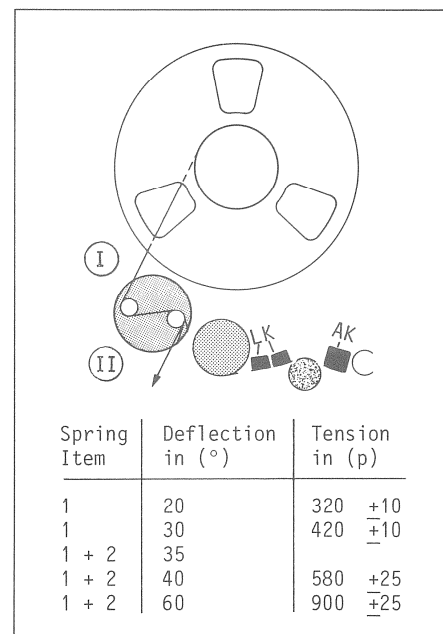


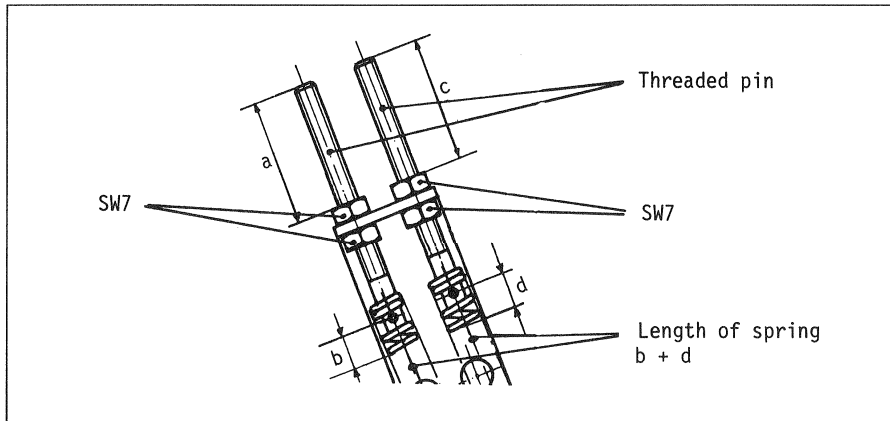
Fig. 3.6.15
 Linkes Federsystem 2"
 Left-hand spring system 2"

3.6.3

Einfluss der Position der Gewindestange sowie der Federlänge auf die Charakteristik

3.6.3

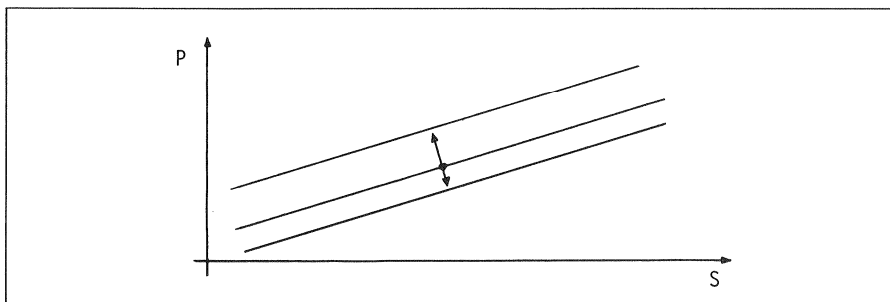
Influence of the threaded rod position and the spring length on the spring characteristic



Figur 3.6.16

Eine Verstellung der Gewindestange ergibt eine parallele Verschiebung der eingestellten Federkraftkurve.

Adjustments to the threaded rod results in a parallel shift of the corresponding spring tension curve.

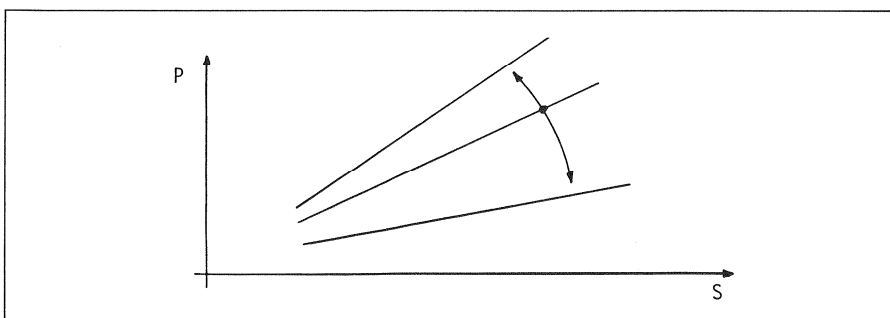


Figur. 3.6.17

Durch eine Verkürzung oder Verlängerung der Feder b/d wird die Steilheit der Federcharakteristik eingestellt:

The steepness of the spring characteristic can be influenced by shortening or elongating spring b/d:

Längere Feder = flachere Charakteristik/ longer spring = flatter characteristic/
kürzere Feder = steilere Charakteristik shorter spring = steeper characteristic



Figur 3.6.18

3.6.4 Einstellung des Bandzuges 1" und 2"

Voraussetzung:

Die Federsysteme müssen nach Abschnitt 3.6.2 richtig eingestellt sein.
Die Spannung an den Bandzugwaagenpotentiometern Abschnitt 3.6.1 und die Speisespannungen 3.1 müssen richtig eingestellt sein.

Hinweis:

Die Messungen werden mit einem Bandzugmessgerät (Tentelometer) ausgeführt. Es soll zur Messung eine Spule mit 10" Durchmesser verwendet werden.
Band auflegen und bis Mitte Band vorspulen (Auf der Auf- und Abwickelspule befindet sich gleich viel Band).
Einige Male die Tasten Play-Stop-Play drücken.
Mit dem Tentelometer den Bandzug auf der linken Seite messen und mit den Werten aus Fig. 3.6.20 vergleichen.

Ist die Abweichung kleiner als 20g kann mit Potentiometer R53 der Bandzug eingestellt werden (unteres Potentiometer auf 1.180.457)

Für eine grössere Abweichung als 20g die Federcharakteristik, durch Verlängern oder Verkürzen von Abstand [a], zu verändern.

Den Bandzug auf der rechten Seite mit dem Tentelometer messen und mit den Werten aus Fig. 3.6.20 vergleichen.
Ist die Abweichung kleiner als 20g kann mit Potentiometer R44 der Bandzug eingestellt werden (oberes Potentiometer 1.180.457).

Für eine grössere Abweichung als 20g ist die Federcharakteristik, durch Verkürzen oder Verlängern von Abstand [a], zu verändern.

Anmerkung:

Falls kein Tentelometer vorhanden ist, kann eine ungefähre Messung wie folgt durchgeführt werden.

Band auflegen und bis Mitte Band vorspulen.

Deckel von der Andruckrolle entfernen. Maschine in Play starten.

Einen Sechskantschlüssel (3mm) in die Mittelschraube der Andruckrolle stecken.

Mit diesem Sechskantschlüssel die Andruckrolle von der Capstanachse soweit wegziehen, dass kein Bandtransport durch den Capstan erfolgt.

Das Band wird jetzt nur noch von den Wickelmotoren transportiert.

Nach ungefähr einer halben bis ganzen Umdrehung der Aufwickelspule muss das Band stoppen.

3.6.4 Adjusting the tape tension 1" and 2"

Prerequisites:

The spring systems must be adjusted correctly as specified in section 3.6.2.

The voltage at the tape tension potentiometers (section 3.6.1) and the supply voltages (section 3.1) must be adjusted correctly.

Note:

The following measurements are made with a tape torque meter (tentelometer).

A reel with a diameter of 10" should be used for the measurements.

Mount tape and wind forward to the middle of the tape (the take-up reel and the feed reel should contain the same amount of tape).

Press PLAY/STOP keys several times. Measure the tape tension on the left-hand side with the aid of the tentelometer and compare with the values specified in Fig. 3.6.20.

If the deviation is less than 20g, the tape tension can be adjusted with potentiometer R53 (lower potentiometer on 1.180.457).

If the deviation exceeds 20g, the spring characteristic must be corrected by shortening or increasing distance (a).

Measure the right-hand tape tension with the tentelometer and compare with the values specified in Fig. 3.6.20. If the deviation is less than 20g, the tape tension can be adjusted with potentiometer R44 (upper potentiometer on 1.180.457)

If the deviation exceeds 20g, the spring characteristic is to be corrected by shortening or increasing the distance (a).

Note:

If no tentelometer is available, an approximative measurement can be made as follows:

Mount tape and spool forward to the middle of tape. Remove cover of pressure roller. Start recorder in PLAY mode.

Insert a hexagon-socket-screw key (3mm) into the center screw of the pressure roller.

Use this key to pull the pressure roller away from the capstan shaft to the point where the capstan no longer transports the tape.

The tape is now only transported by the spooling motors. The tape should stop after the take-up reel has completed one half to one full revolution.



Fig. 3.6.19

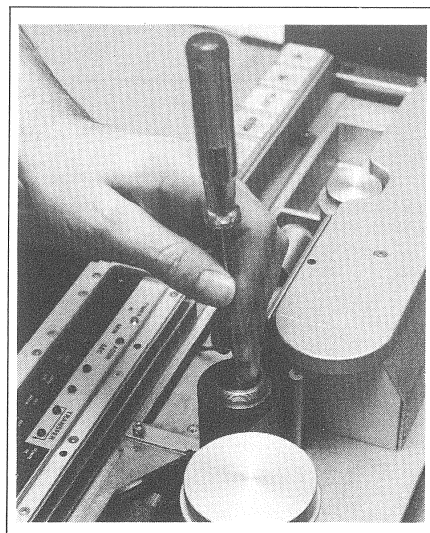


Fig. 3.6.19a

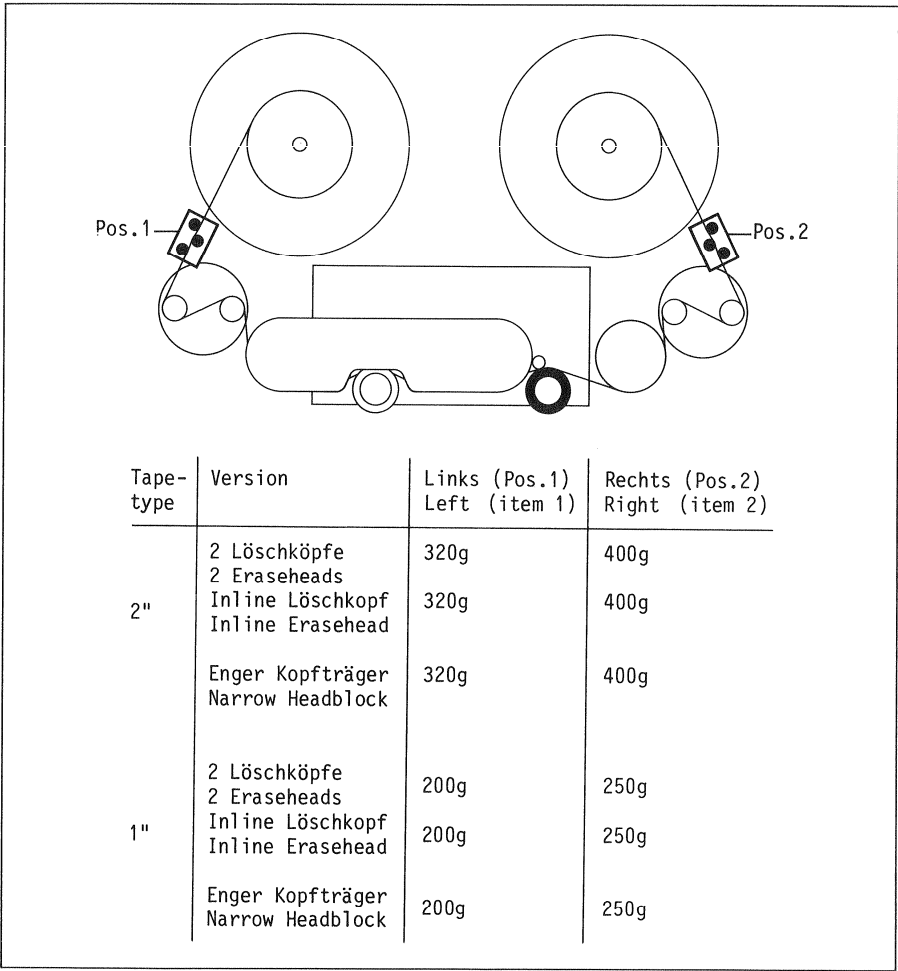


Fig. 3.6.20
Toleranz ±10g
exklusive Messgeräte Toleranz

Fig. 3.6.20
Tolerance +10g
excluding Tolerance of measuring
instrument.

3.6.5 Einstellung der Bandzugwaagen-End- schalter

Achtung:

Bei zu starkem Fremdlicht arbeitet der Endschalter nicht korrekt.

In Ruhestellung der Bandzugwaage muss die Schaltfahne [1] ganz in die Lichtschranke [2] eintauchen (siehe Figur 3.6.21).

Ist dies nicht der Fall, Schaltfahne durch Lösen der Befestigungsschrauben justieren.

3.6.5 Adjusting the tape tension sensor limit switches

Caution:

This light-barrier type limit switch does not operate correctly if the ambient light is too bright. When the tape tension sensor is in its neutral position, the switch lug (1) should be plunged all the way into the light barrier (2) (see Fig. 3.6.21). Should this not be the case, adjust switch lug by loosening the mounting screws.

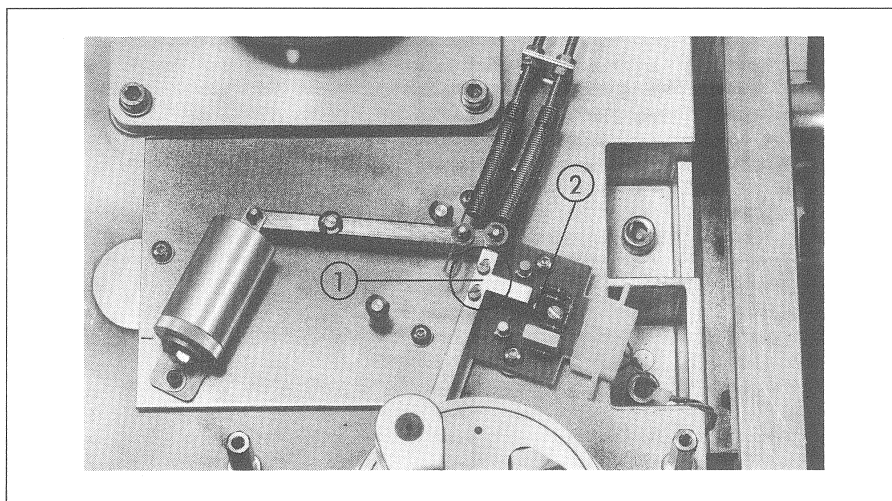


Fig. 3.6.21

Die Bandzugwaage etwa 30° auslenken. Die Stoplampe muss jetzt konstant leuchten. Die Bandzugwaage langsam gegen die Ruhestellung bewegen. Bei etwa 5° Auslenkung muss die Stoplampe zu blinken beginnen.

Die Einstellung ist für beide Bandzugwaagen-Endschalter gleich.

Open tape tension sensor to a deflection of approx. 30°. The stop lamp should now be on continuously. Slowly release tape tension sensor against its neutral position. When the deflection is approx. 5°, the stop lamp should start to flash.

The adjustments are identical for both tape tension sensor limit switches.

3.6.6 Kontrolle der Wickelmotor-Steuerung

Schritt 1

Band auflegen und bis Mitte Band vor-
spulen.
Die linke Umlenkrolle mit dem Band
festhalten.

Kontrollen:

Taste Forward > drücken;

Die linke Bandzugwaage zeigt $30^\circ \pm 3^\circ$
Auslenkung.

Die rechte Bandzugwaage zeigt $60^\circ \pm 3^\circ$
Auslenkung.

Taste Rewind < drücken;

Die rechte Bandzugwaage zeigt $30^\circ \pm 3^\circ$
Auslenkung.

Die linke Bandzugwaage zeigt $60^\circ \pm 3^\circ$
Auslenkung.

Diese Angaben sind nur gültig bei
richtig eingestellter Bandzugregelung.

Schritt 2

Kontrolle der Spannungsüberwachung
Maschine einschalten, Band auflegen,
Stoptlampe leuchtet.
Eine Sicherung (20A) aus dem Spooling-
motor Power-Supply heraus-schrauben.
Sobald die Spannung unter einen ge-
wissen Wert gefallen ist, blinkt die
Stoptlampe.
Keine Laufwerkfunktion kann ausgeführt
werden.
Die Sicherung (20A) wieder einsetzen.
Die Maschine ausschalten und nach ca.
1 Sekunde wieder einschalten. Nun muss
sich die Maschine normal verhalten.
Stoptlampe leuchtet.

Maschine einschalten, Band auflegen
und in PLAY starten.
Emitter und Kollektor (Gehäuse) eines
der acht in Fig. 3.6.22 markierten
Leistungs-transistoren mit einem Wider-
stand von $1\ \Omega$ (min 9 W) verbinden.
Der Bandtransport kommt sofort zum
Stillstand und die Stoptlampe blinkt.

Kurzschlusswiderstand entfernen.
Die Maschine ausschalten und nach ca.
1 Sekunde wieder einschalten.
Die Stoptlampe leuchtet.

Wie Fig. 3.6.22 zeigt, ist dieser Vor-
gang achtmal durchzuführen, um die
ganze Schaltung zu prüfen.
Schritt 3 wird dabei immer wiederholt.

3.6.6 Checking the spooling motor control

Step 1

Mount tape and spool forward to middle
of tape. Grip left-hand guide roller
and the tape.

Checking:

Press forward > button:

The left-hand tape tension sensor
shows a deflection of $30^\circ \pm 3^\circ$.

The right-hand tape tension sensor
shows a deflection of $60^\circ \pm 3^\circ$.

Press rewind < button:

The right-hand tape tension sensor
shows a deflection of $30^\circ \pm 3^\circ$.

The left-hand tape tension sensor
shows a deflection of $60^\circ \pm 3^\circ$.

These specifications are only appli-
cable if the tape tension control has
been adjusted correctly.

Step 2

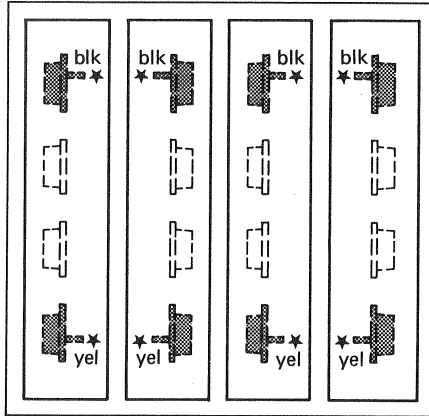
Checking the voltage monitoring:
Switch recorder on, mount tape, stop
lamp turns on:
Unscrew one fuse (20A) from the spoo-
ling motor power supply.
As soon as the voltage drops below a
certain value, the stop lamp starts
to flash.
None of the tape transport functions
can be performed. Reinstall the fuse
(20A). Switch recorder off and back on
again after a delay of approximately
1 second. The recorder should operate
correctly. Stop lamp turns on.

Switch recorder on; mount tape; start
in PLAY mode.
Connect emitter and collector (housing)
of one of the eight power transistors
marked in Fig. 3.6.22 by a resistor of
 $1\ \Omega$ (9 W min.).
The tape transport should come to an
immediate stop and the stop lamp flash-
es.
Remove short-circuit resistor.
Switch recorder off and on again after
a delay of approx. 1 second.
The stop lamp turns on.

As shown in Fig. 3.6.22, this procedure
is to be executed eight times to check
the entire circuit.
Step 3 has therefor to be repeated.

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Rear view of power unit 1.180.501
with power transistors to be short
circuited



★ Colour of emitter wire

Short-circuit between emitter
and collector (housing)
(Top view of power unit)

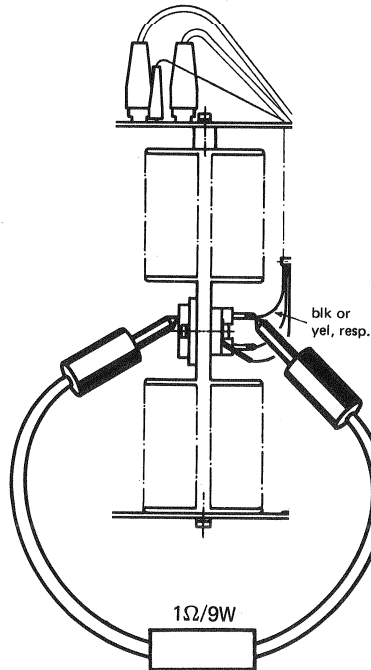


Fig. 3.6.22

3.7

Einstellung des Capstan Servo PCB 1.180.460 GR 30 EL 7

3.7.1

Vorbereitungen:

Alle Bandführungselemente reinigen.

Erforderliche Messgeräte:

- Tonhöschwankungsmessgerät
(z.B. EMT 420)
- Oscilloscope
- Tonband (Das zur Messung verwendete
Band muss in einem guten Zustand
sein).

3.7

Adjusting the capstan servo PCB 1.180.460 GR30 EL7

3.7.1

Preparatory steps

Clean all tape guidance elements.

Required measuring instruments:

- Wow-and flutter meter (e.g. EMT 420)
- Oscilloscope
- Magnetic tape (the tape used for
this measurement must be in new-
like condition).

3.7.2

Einstellvorgang

Tonhöhen schwankungsmesser (z.B. EMT 420) an einen Audiokanal der Maschine anschliessen und die Pilotfrequenz einspeisen.

Die Gleichlaufschwankungen werden über Band bei langsamer Bandgeschwindigkeit gemessen und mit Potentiometer R47 auf Print 1.180.460 (Capstan Servo) auf ein Minimum der bewerteten Anzeige abgeglichen.

Da das Minimum der bewerteten Messung bei schnellen Maschinen sehr breit sein kann, so wird dieses noch mit Hilfe des KO exakt abgeglichen. Der KO wird an TP10 (Masse TP1) des Capstan-Servos angeschlossen. Das sinus halbwellenförmige Signal wird mit Potentiometer R47 auf Capstan Servo-Print 1.180.460 auf minimale Amplitude abgeglichen (Feinabgleich). Bei diesem Abgleich muss auch darauf geachtet werden, dass die bewertete Anzeige ebenfalls noch im Minimum liegt.

3.7.2

Adjustment procedure

Connect wow-and-flutter meter (e.g. EMT 420) to one of the audio channels of the recorder and feed in pilot tone frequency.

The wow and flutter is measured with tape at low speed and adjusted for minimum weighted indication with potentiometer R47 on circuit board 1.180.460.

Since the minimum range of the weighted measurement can be rather wide for fast recorders, it must be fine-adjusted with the aid of the CRO. Connect CRO to TP10 (ground TP1) of the capstan servo. The sinusoidal half-wave signal is adjusted for minimum amplitude with potentiometer R47 located on the capstan servo board 1.180.460. When this fine-adjustment is made the weighted indication must still remain at the minimum.

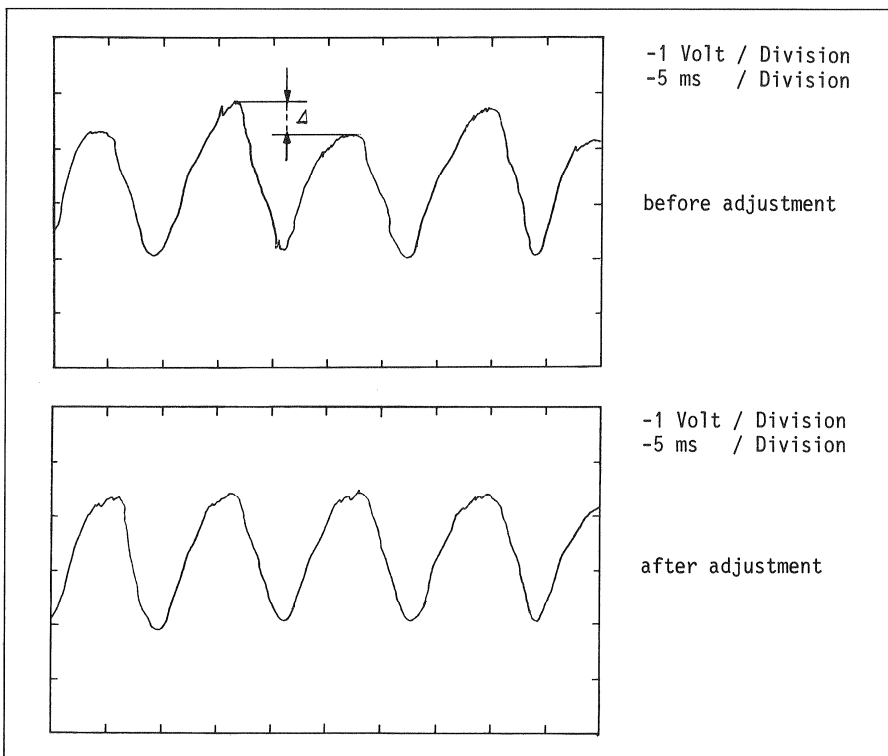


Fig. 3.7.1

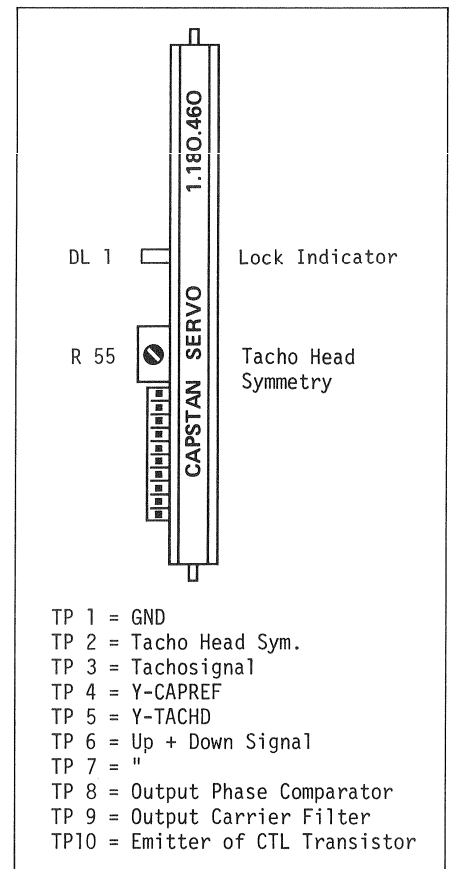


Fig. 3.7.2

3.8 Einstellen des Bandlaufes

3.8.1 Einleitung

Voraussetzung für die Einstellung des Bandlaufs ist ein korrekt eingestelltes Laufwerk!

Anmerkung:

Wenn der Bandlauf keine allzu grosse Abweichung vom Idealzustand aufweist, sollte auf eine Neujustierung verzichtet werden. Ist die Neujustierung aber unumgänglich, müssen die entsprechenden Arbeiten mit grosser Sorgfalt und dem nötigen know how ausgeführt werden. Die Benützung der aufgeführten Lehren ist unerlässlich.

Erforderliche Messgeräte:

- Referenz-Lehre für A80/A800
Best.Nr. 10.010.001.01
- Präzisions-Lehre für A80/A800
Best.Nr. 10.010.001.05
- Neuwertiges Magnetband
- Diverse Werkzeuge

3.8 Adjusting the tape guidance

3.8.1 Introduction

Before the following adjustments are made the tape transport must be correctly adjusted.

Note:

If the tape guidance does not deviate significantly from the ideal setting, no readjustments should be made. However, if a readjustment cannot be avoided, the corresponding work must be performed with utmost care and only by persons who possess the necessary know-how. The gauges listed below must be used in all cases.

Required measuring tools:

- Reference gauge for A80/A800
Part No. 10.010.001.01
- Calibration gauge for A80/A800
Part No. 10.010.001.05
- Magnetic tape in new-like condition
- Misc. tools

3.8.2Bandzugwaagen Links/Rechts

Sollte die Höhe der eingestochenen Bandzugwaagen nicht mit der Lehre übereinstimmen, so können die Rollen axial verschoben werden, indem die Gewindestifte (1) Fig.3.8.1 + 3.8.2 (Inbus 2 mm) gelöst werden.

3.8.2Tape tension sensor left/right

If the height of the plunge-cut tape tension sensors does not correspond to the gauge, the rollers can be shifted axially by loosening the set screws (1) Fig. 3.8.1 and 3.8.2 (hexagon-socket-screw key 2mm).

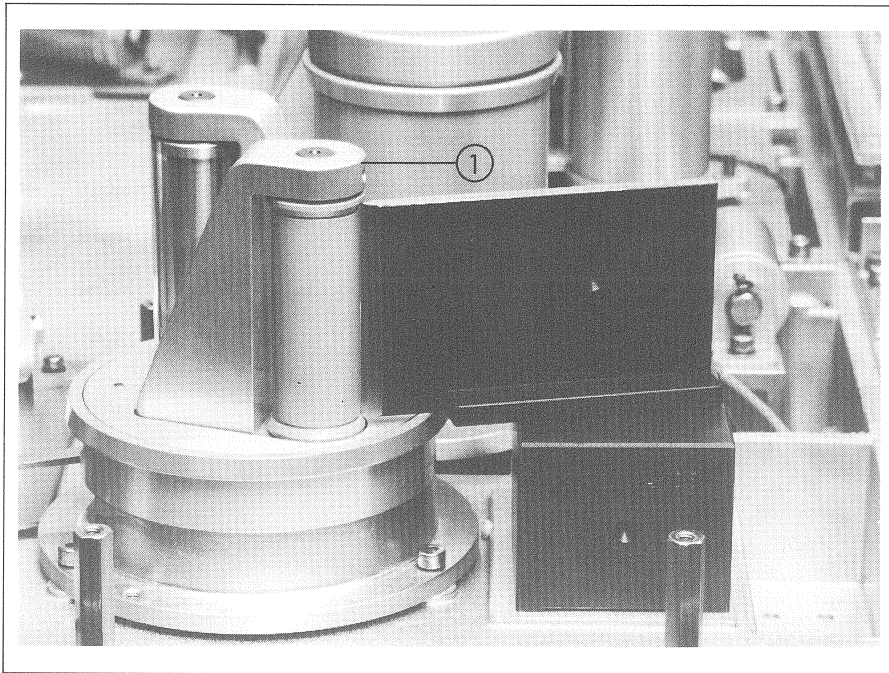


Fig 3.8.1
Bandzugwaage links mit Lehre

Fig. 3.8.1
Tape tension sensor left with gauge

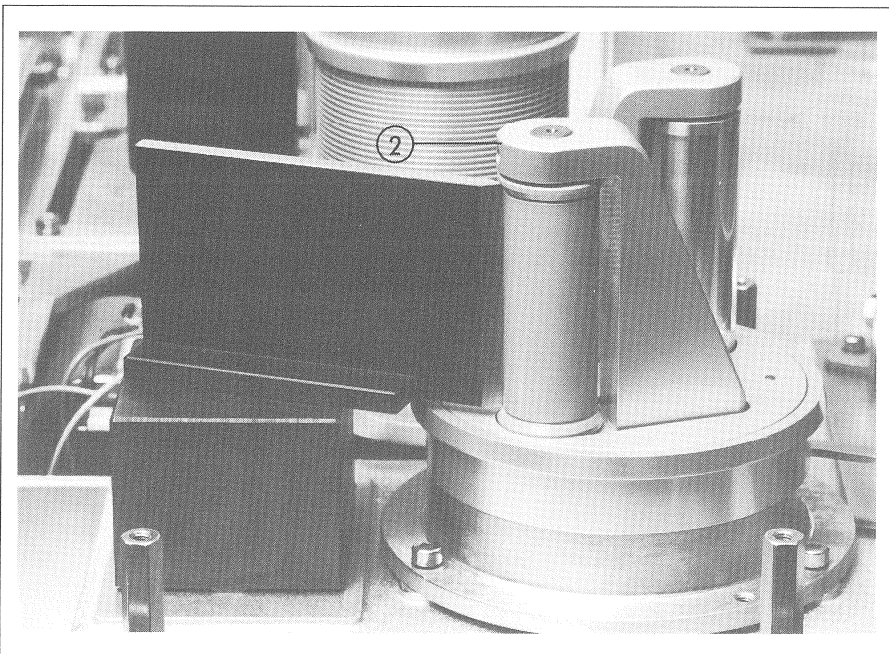


Fig. 3.8.2
Bandzugwaage rechts mit Lehre

Fig. 3.8.2
Tape tension sensor right with gauge

3.8.3

Andruckrolle und Vorberuhigungsrolle

Die Höhe dieser Rollen kann verändert werden durch Auswechseln der Distanzscheiben (2) Fig. 3.8.3 + 3.8.4.

Hier aufgeführt die erhältlichen Distanzscheiben:

0,10 mm	1.080.530.08
0,12 mm	1.080.530.10
0,15 mm	1.080.530.09
0,50 mm	1.080.530.07
1,20 mm	1.080.530.06

Durch Wechseln der Reihenfolge der 4 Gummirollen (1) Fig. 3.8.4 auf der Andruckrolle kann der Bandlauf bzw. Wow and Flutter optimiert werden.

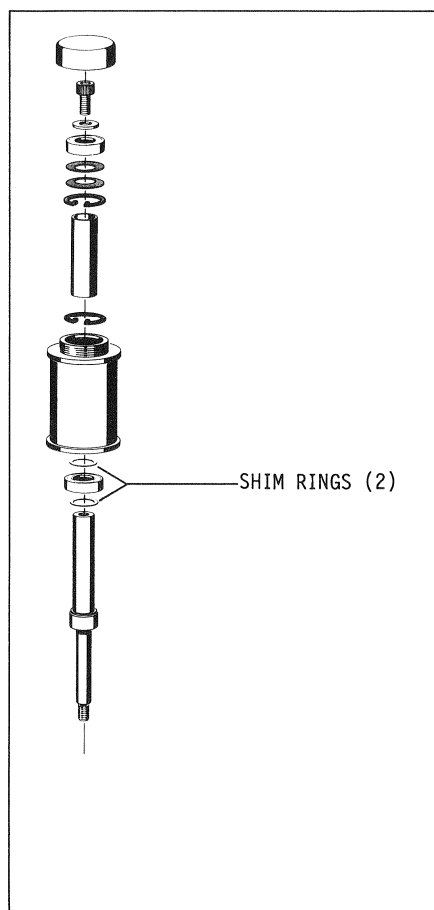


Fig. 3.8.3
Vorberuhigungsrolle
Prestabilizer roller

3.8.3

Pressure roller and prestabilizer roller

The height of these rollers can be adjusted by replacing the shim rings (2) Fig. 3.8.3 and 3.8.4.

The following shim rings are available:

0.10 mm	1.080.530.08
0.12 mm	1.080.530.10
0.15 mm	1.080.530.09
0.50 mm	1.080.530.07
1.20 mm	1.080.530.06

The tape motion or the wow and flutter can be optimized by changing the sequence of the four rubber rollers (1) Fig. 3.8.4.

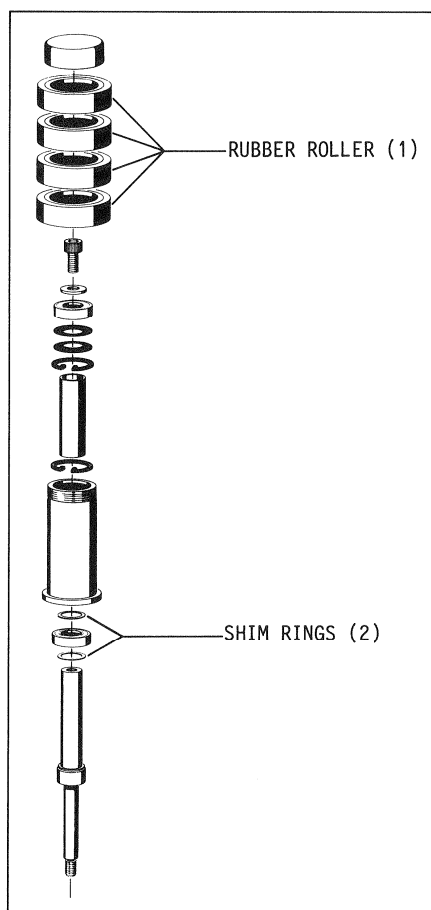


Fig. 3.8.4
Andruckrolle
Pressure roller

3.8.4Move Sensor Rolle

Die Move-Sensor-Rolle Fig.3.9.5 soll nicht demontiert werden, um die Rollenhöhe zu justieren.

Diese Baugruppe ist ab Werk auf ihre Höhe eingestellt und die Kugellager sind mit dem vorgeschriebenen Wert verspannt.

Die Kugellager können nicht ausgetauscht werden, da die benötigten Messinstrumente fehlen um die Lichtschranken wieder einzustellen. Daher ist die ganze Baugruppe beim Hersteller auszutauschen.

3.8.4Move sensor roller

The move sensor roller (Fig. 3.5.8) should not be disassembled in order to adjust the roller height. The height of this subassembly is factory-adjusted and the bearings are braced with the required torque.

The bearings cannot be replaced because the required tools are not available for readjusting the light barriers. For this reason the entire assembly should be exchanged against a new factory-adjusted unit.

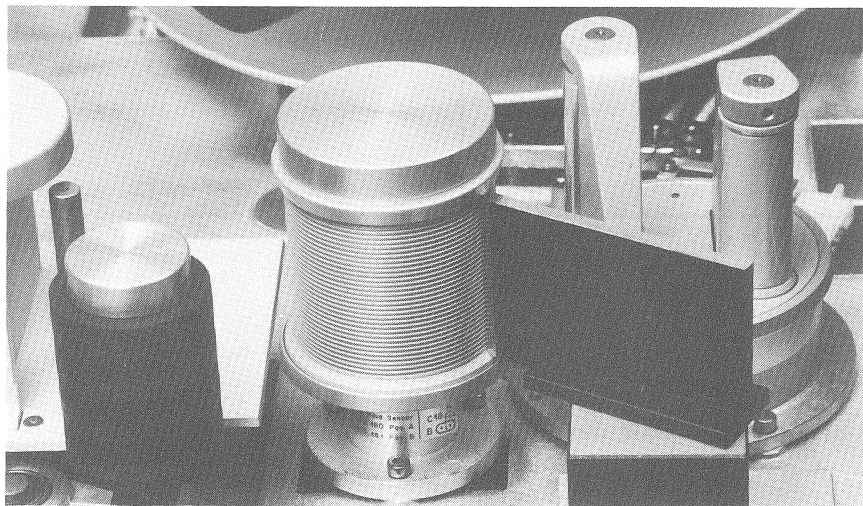


Fig. 3.8.5
Move Sensor Rolle mit Lehre

Fig. 3.8.5
Move sensor roller with gauge

3.8.5Umlenkrolle links

Die Umlenkrolle links Fig.3.8.6 sollte ebenfalls nur als ganze Baugruppe ausgetauscht werden. Es gelten die gleichen Kriterien wie beim Move Sensor.

3.8.5Left-hand guide roller

The left-hand guide roller (Fig. 3.8.6) should only be replaced as a complete assembly. The same criteria apply as for the move sensor.

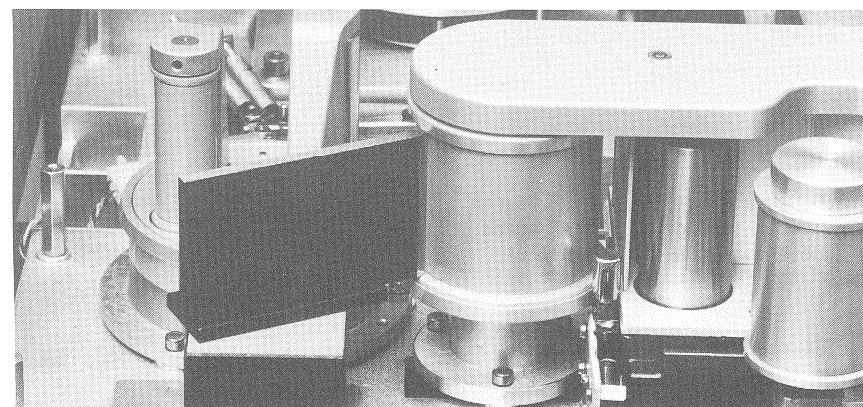


Fig. 3.8.6
Umlenkrolle links mit Lehre

Fig. 3.8.6
Guide roller left with gauge

3.8.6 Spulenflansch

Streift das Band auf dem Spulenteller, speziell bei offenem Wickel, kann die Höhe der Spulenflansche mit einer Distanzscheibe von 0.1mm Nr.1.062.353-03 verändert werden. Dabei sind Adapter und Bremsstrommel zu entfernen (siehe Fig. 3.8.7).

Anmerkung:

Die Spulenflansche sollen jedoch so hoch wie möglich eingestellt werden, um ein Verziehen des Magnetbandes zu verhindern.

3.8.6 Reel flange

If the tape scrapes against the reel flange (especially with single-sided pancakes), the height of the reel flange can be adjusted with a 0.1 mm shim ring No. 1.062.353-03. The adapter and the brake drum must be removed for this step (see Fig. 3.8.7).

Note:

The reel flanges should be adjusted as high as possible in order to prevent stretching of the tape.

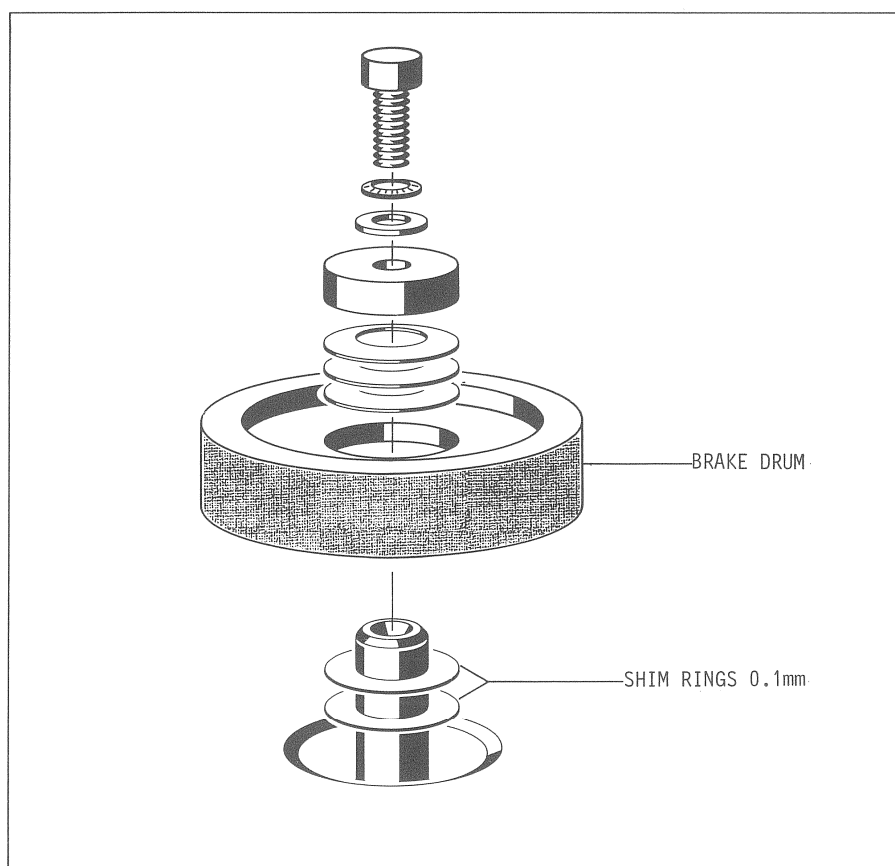


Fig. 3.8.7
Spulenflansch

Fig. 3.8.7
Reel flange

3.8.7 Kontrolle des Bandlaufes

Das Magnetband muss bei beiden Geschwindigkeiten und allen Laufwerkfunktionen einwandfrei in den Führungsflächen laufen. Zwischen den Spulentellern darf das Magnetband nicht streifen.

Das Mass vom geschliffenen Guss bis zur Magnetbandunterkante sollte $41 \text{ mm} \pm 0.075 \text{ mm}$ betragen.

3.8.7 Checking the tape motion

The tape should run correctly between the guidance surface at either speed. The tape should not contact either side of the reel flange.

The distance between the polished casting to the underside of the tape should measure $41 \text{ mm} \pm 0.075 \text{ mm}$.

3.9

AUSWECHSELN UND EINSTELLEN DER TONKÖPFEErforderliche Messgeräte:

Referenzlehre A80/A800 1" + 2"
Nr. 10.010.001.01

Präzisionslehre A80/A800 1"
Nr. 10.010.001.04

Präzisionslehre A80/A800 2"
Nr. 10.010.001.05

Wachsstift Nr. 10.416.001.01

Diverse Werkzeuge

3.9

REPLACING AND ADJUSTING THE SOUND HEADSRequired measuring instruments:

Reference gauge A80/A800 1" + 2"
No. 10.010.001.01

Precision gauge A80/A800 1"
No. 10.010.001.04

Precision gauge A80/A800 2"
No. 10.010.001.05

Wax crayon No. 10.416.001.01

Misc. tools

3.9.1

Auswechseln der Tonköpfe

Kopfträger ausbauen (3 Inbusschrauben 3 mm) und Kopfträgerdeckel (2 Inbusschrauben 2 mm) entfernen.
Die Tonköpfe können nach dem Lösen der von unten zugänglichen 3 mm Inbusschrauben (A) entfernt werden.

Wichtig

Die schwarze Taumelplatte darf beim Auswechseln eines Tonkopfes nicht verstellt werden (Schrauben[B]!) Die Distanz zwischen Tonkopfauflage und Kopfspiegel ist bei allen Köpfen auf dasselbe Mass gefräst, sodass sich ein Einstellen der Kopfhöhe erübrigt.

3.9.1

Replacing the tape heads

After having taken off the headblock (3 mm Allenhead screws) remove its cover (2 mm Allenhead screws).
The tape heads can be removed after undoing the 3 mm Allenhead screws [A] which are accessible from below.

Important

The position of the black swivel plate must not be varied (screws [B]! Because all tape heads are milled to the same distance between core edge and mounting surface, it is not necessary to re-adjust the head height after replacement.

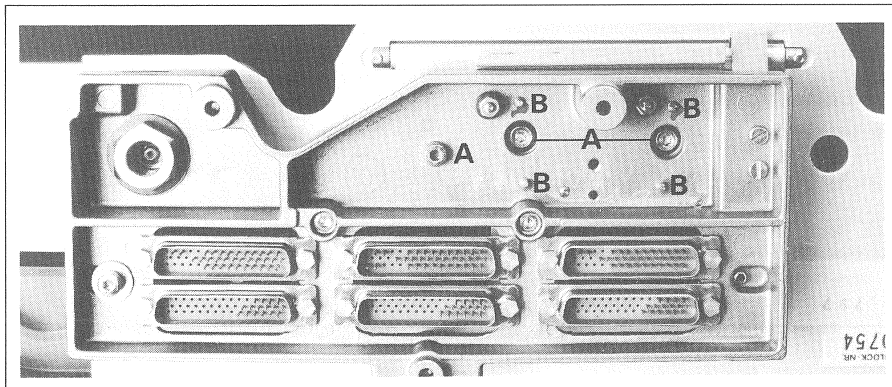


Fig. 3.9.1

Nach dem Auswechseln des Tonkopfes ist mit der Bandführungs-Einstellehre zu kontrollieren, ob der Kopfspiegel senkrecht steht und die richtige Höhe eingenommen hat.

Für diese Kontrolle sollte der Kopfträger und die Einstellehre auf eine Richtplatte oder, notfalls, auf eine Glasplatte gestellt werden.

After having replaced a tape head the head face and the head height must be checked by means of the tape guide setting gauge. The head face must be vertical.

To perform the checks with the tape guide setting gauge put the head block and the setting gauge on a levelling plate or a glass plate.

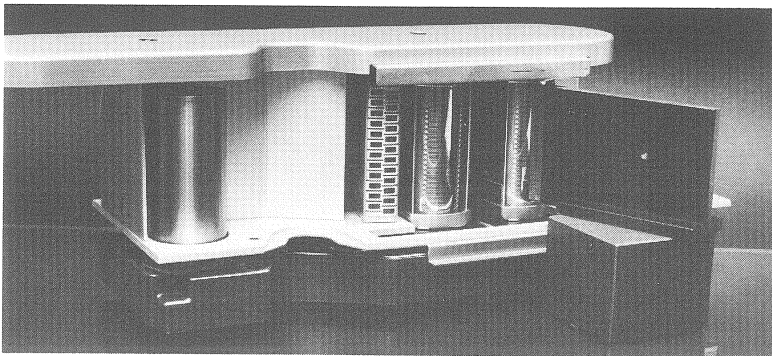


Fig. 3.9.2

3.9.2 Einstellen der Tonköpfe

Schritt 1:
Bandzug einstellen: links 320 p
rechts 400 p

siehe Abschnitte 3.5 oder 3.6

Schritt 2:
Köpfe entmagnetisieren
siehe Kapitel 2

Schritt 3:
Kopfspiegel-Einstellung
Aufnahme- und Wiedergabekopf mit einem
Wachsstift (Best.Nr. 10.416.001.01)
markieren (siehe Fig. 3.9.3).

Band auflegen, höhere Geschwindigkeit
wählen und Gerät während ca. 2 Min.
in Play laufen lassen.

3.9.2 Adjustment

Step 1:
Adjust tape tension: left side 320 p
right side 400 p

see sections 3.5 or 3.6

Step 2:
Demagnetize heads
see section 2

Step 3:
Head-wrap adjustment
Mark record- and reproducehead with a
wax crayon (Order Nr. 10.416.001.01)
as shown in fig. 3.9.3.

Put a tape onto the machine, select
high-speed and start the tape recorder
in play mode for approx. 2 min.

Band vor den Köpfen abheben. Ist der Kopfspiegel richtig eingestellt, muss die Farbe auf beiden Seiten des Kopfspaltes symmetrisch ausgewischt sein. (Siehe Fig. 3.9.4) (Mit Lupe betrachten).

Ist dies nicht der Fall, muss der Kopf durch Drehen in die richtige Position gebracht werden.

Achtung: Wichtig

Nur die Schrauben (A) (3 mm inbus) in Fig. 3.9.1 leicht lösen, um Kopf drehen zu können.

Die kleinen Schlitzschrauben nie verdrehen, da diese die Taumelplatte auf 1/100 mm genau positionieren.

Kopfbefestigungsschrauben wieder festziehen und Kopfspiegel nochmals kontrollieren.

Schritt 4:

Löschkopf-Voreinstellung

Einstellmethode a)

Kopfträger-Abdeckung entfernen.

Band auflegen und in Play starten.

Von oben senkrecht auf den Löschkopf blicken und diesen durch Drehen justieren, bis die beiden Abstände von Kopfkante zum Band gleich gross sind. (Siehe Distanzen a) und b) in Fig. 3.9.5)

Einstellmethode b)

Diese Einstellart entspricht der Kopfspiegeleinstellung.

Dabei ist zu beachten, dass beide Löschspurreihen symmetrisch in der Abrieblfläche liegen.

Hinweis:

Nur die Ferritflächen mit Wachsstift markieren, da die Striche schlecht vom weissen Kopfteil gereinigt werden können.

Schritt 5:

Bandzug nochmals kontrollieren und wenn nötig korrigieren.

Schritt 6:

Abgleich des Löschkopfes elektrisch

siehe Abschnitt 4.4.

Einstellung des HF-Drivers, Löschteil

Remove the tape in front of the head. The head wrap is properly adjusted if the color is erased symmetrically on both sides of the headgap, as shown in picture 3.9.4 (Inspect the headwrap with a magnifying glass).

If this is not the case, turn the head into the correct position.

Important:

Loosen the screws (A) (3mm allenkey) in figure 3.9.1, so as to be able to turn the head.

Never misalign a small slotted worm-screw which positiones the swivel plate to a precision of 1/100mm.

Tighten the headmounting screws again and check the headwrap adjustment once more.

Step 4:

Erasehead-Preadjustment

Adjustment procedure a)

Remove headcover plate (1) drawing 4.

Load tape and start tape recorder in play mode.

Inspect the erasehead from the top vertical position and turn the erasehead, until both distances from the headedge to the tape are the same (see distances a and b in figure 3.9.5).

Adjustment procedure b)

This procedure corresponds to the head-wrap adjustment.

Make sure that both erase-track-lines have been wiped out symmetrically.

Note:

Only mark the ferriteparts with wax crayon, because it is difficult to clean marks on the white headpart.

Step 5:

Check tape-tension again and readjust if necessary.

Step 6:

Electrical alignment of the erase head:

see section 4.4

Adjustment of the HF-Driver, Erase section

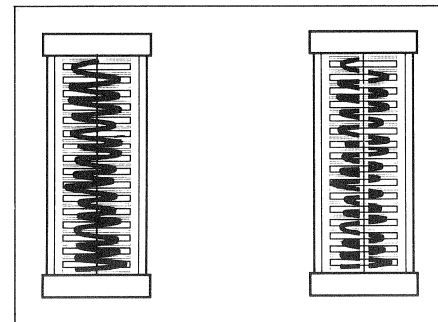


Fig. 3.9.3

Fig. 3.9.4

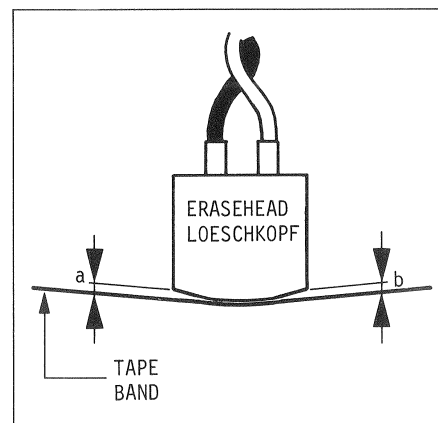


Fig. 3.9.5
Band/Löschkopf
Tape/Erase head

Schritt 7:**Azimut- Einstellung****a) Wiedergabe Azimut- Einstellung**

Bezugsband für schnellere Geschwindigkeit auflegen und zum Spalt-Einstellungsteil vorspulen. Ausgang der Kanäle 1 und 2 auf die Eingänge eines 2- Strahloszillographen anschliessen. Azimutschraube Reproducehead drehen bis am Oszillographen (oder VU-Meter) maximale Ausgangsspannung erreicht wird. Durch geringfügiges Verdrehen kann die Phase optimiert werden (Sinuswellen zur Deckung bringen).

Denselben Vorgang wiederholen mit den anderen Kanälen (z.B. Kanal 1 und 5, Kanal 1 und 9...sw. bis Kanal 1 und 16 oder 24.)

Einstellung nochmals kontrollieren und nötigenfalls korrigieren.

b) Aufnahmekopf-Azimut- Einstellungen

10 kHz 10 dB unter Vollpegel aufzeichnen, höhere Geschwindigkeit. Einstellvorgang genau gleich wie Wiedergabe. Einstellung erfolgt jedoch mit Recordhead- Azimutschraube.

Step 7:**Azimuth-Adjustment****a) Reproduce Azimuth- Adjustment**

Put a reference test-tape for higher speed onto the tape recorder. Connect channels 1 and 2 to the inputs of a 2-channel oscilloscope. Turn the azimuth screw of the reproduce head (see figure 3.9.6) to obtain max. output voltage. Optimize the phase between the two channels (Sinewaves on oscilloscope must cover each other).

Repeat procedure above with the other channels (for example channel 1 and 5, and channel 1 and 9...and so on, until channel 1 and 16 or 24)

Check the adjustments and readjust if necessary.

b) Recordhead Azimuth-Adjustment

Record 10 kHz 10 dB below peak recording level, fast speed. Same adjustment procedure as in a) above, but adjust with the screw for recordhead azimuth.

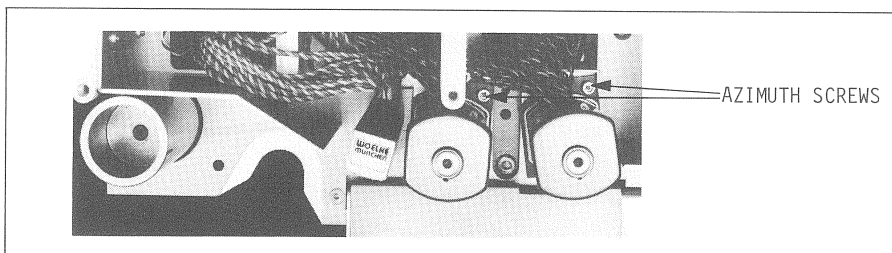


Fig. 3.9.6

Schritt 8:**Löschkopf- Feineinstellung**

Während ca. 5 Min., bei der höheren Geschwindigkeit, 1 kHz Vollpegel auf allen Spuren aufzeichnen.

Aufgezeichnetes Signal löschen (kein Eingangssignal einspeisen) und mit selektivem Filter (steiles 1 kHz Durchlassfilter) Löschdämpfung bei allen Kanälen messen.

Beim Kanal mit der geringsten Löschdämpfung durch vorsichtiges Verdrehen des Löschkopfes Löschdämpfung optimieren.

Vorgang wiederholen, bis alle Kanäle ungefähr dieselben Löschdämpfungswerte ergeben.

Wieder den Kanal mit der schlechtesten Löschdämpfung anwählen und Löschdämpfung messen. Löschdämpfung sollte jetzt besser als 75 dB sein.

Step 8:**Erasehead- Finaladjustment**

Record on faster speed 1 kHz peakrecording level on all tracks for approx. 5 min.

Erase the above recorded level channel by channel (feed in no input signal) and measure the erase efficiency with a selective filter, (narrow 1 kHz bandpass filter) for all the channels.

Select the channel with the worst erase efficiency and turn erasehead slightly until you reach the best erase efficiency result on this channel.

Repeat adjustment procedure until all the channels show approx. the same erase efficiency value.

Select the channel with the worst erase efficiency again and measure the erase efficiency value. Now the erase efficiency should be 75 dB or better.

3.10 Anhang

Da nicht immer gravierte Bandzugwaagen-
deckel mit einer Gradeinteilung zur
Verfügung stehen, können auch die Seh-
nenlängen als Hilfsmittel eingesetzt
werden.

3.10 Appendix

If you have not got any engraved tape
tension sensor covers with a graduation
you can use the chord lengths to de-
termine the according angle.

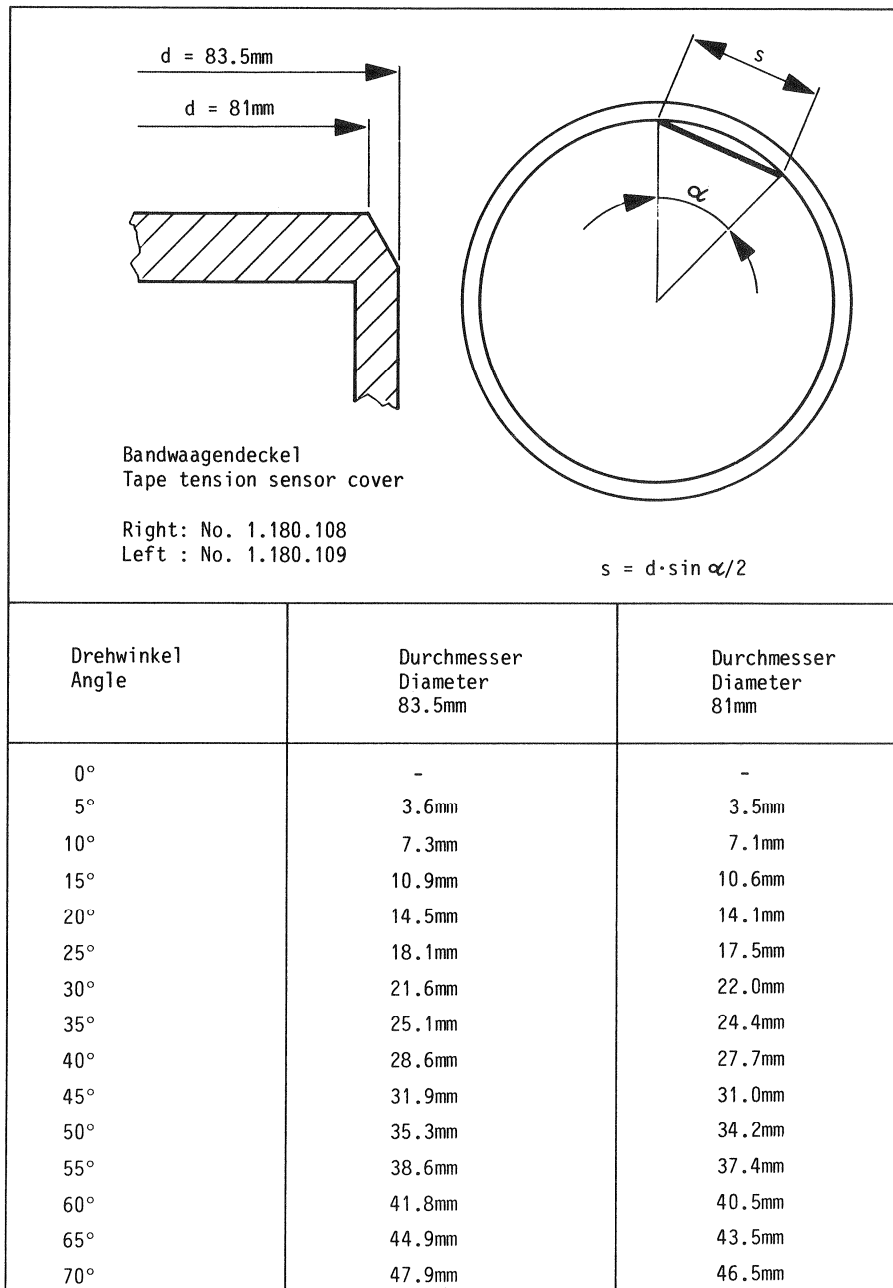
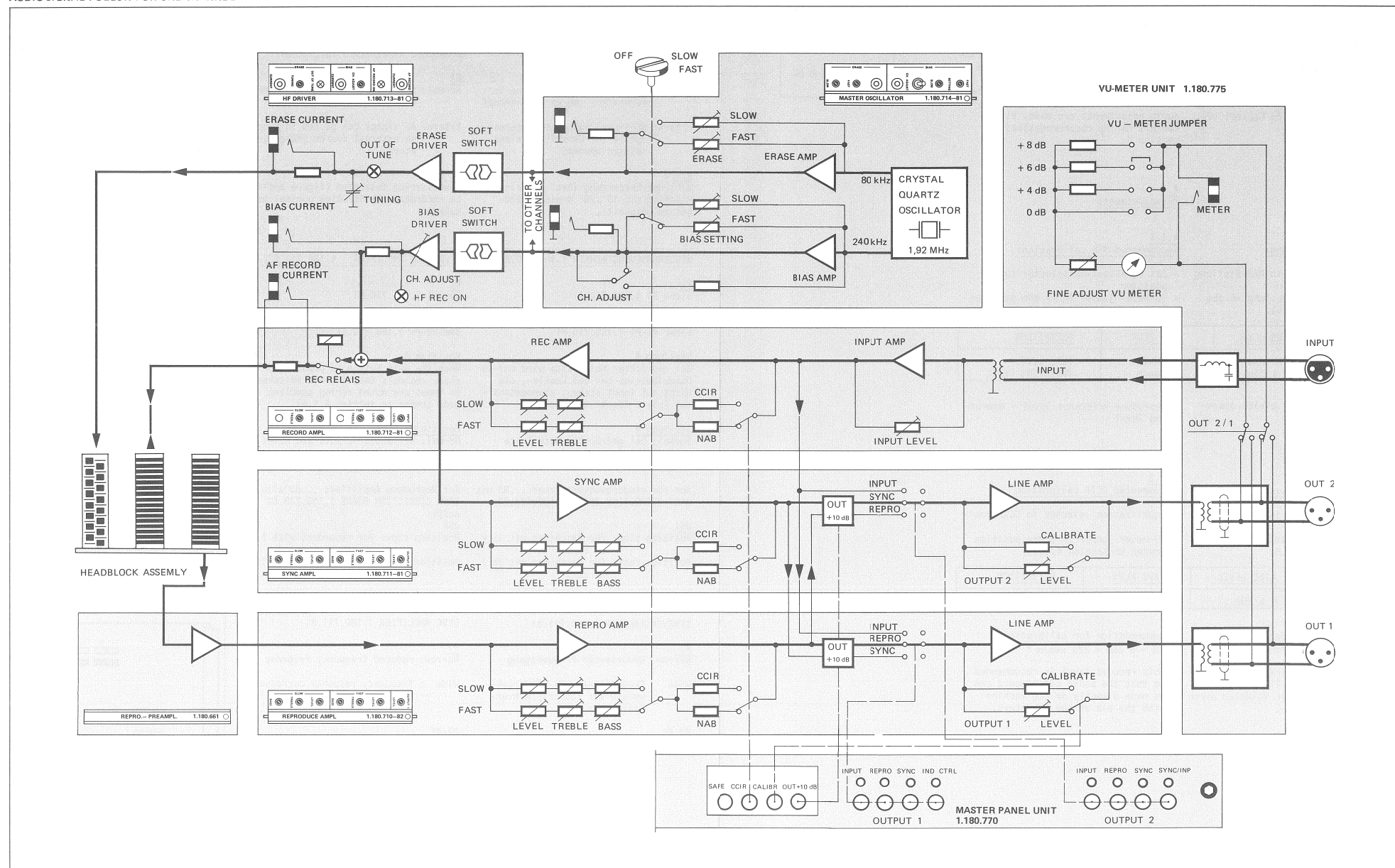


Fig. 3.10.1

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4.9.2	Einstellung des Linienausgangsverst. 1.180.797	Adjusting the line output amp. 1.180.797	4/19*

AUDIO SIGNAL FOLLOW FOR ONE CHANNEL



Einleitung:
Vor den Audioeinstellungen sollte der Bandzug geprüft werden. Tabellen mit Bandzugangaben sind im Teil Laufwerk Einstellungen abgebildet.
Alle bandführenden Teile sollen vor einer Audio-Einstellung gereinigt und entmagnetisiert werden. Bitte beachten Sie die Pflegehinweise im Kapitel (2).

Introduction:
Always check the tape tension before making any audio adjustments. The tables with the tape tension specification can be found in section "Tape transport adjustments".
All tape guidance elements should be cleaned and demagnetized before any audio adjustments are made. Please consult caring recommendations in section 2.

0 dBm = 774.6 mV

4.1
Voreinstellungen

4.1.1
Empfohlene NAB-Einmessung:

- Entzerrungswahltaste in NAB-Stellung
- VU-Meter-Jumper in Stellung +4 dBm (siehe Abschnitt 4.1.5).

VU-METER READING	LINE LEVEL	TAPE FLUX	DEFINITION
+ 6VU 0VU	+ 10 dBm + 4 dBm	640nWb/m 320nWb/m	PEAK LEVEL OPERATING LEVEL

- Wiedergabebezugspegel gleich operating level.

4.1.2
Empfohlene CCIR-Einmessung:

- Entzerrungswahltaste in CCIR-Stellung
- VU-Meter-Jumper in Stellung 0 dBm (siehe Abschnitt 4.1.5).

VU-METER READING	LINE LEVEL	TAPE FLUX	DEFINITION
+ 6VU	+ 6 dBm	640nWb/m	PEAK LEVEL

Für die Einmessung empfohlen:
0 VU = 0 dBm = 320 nWb/m *

* Die Pegelreduktion wird empfohlen, damit die Audioeinstellungen an der Maschine mit Hilfe der VU-Meter durchgeführt werden können.

4.1
Preadjustments

4.1.1
Recommended NAB calibration:

- Set equalization selector to NAB position
- VU-meter jumper in +4 dBm position (refer to section 4.1.5).

- Reproduce reference level = operating level

4.1.2
Recommended CCIR calibration

- Equalization selector in CCIR position
- VU-meter jumper in 0 dBm position (refer to section 4.1.5).

Recommendation for calibration:
0 VU = 0 dBm = 320 nWb/m *

* This reduced level is recommended so that the audio adjustments can be made directly on the machine with the aid of the VU-meters.

4.1.3
Jumperstellungen der Audioprints

WIEDERGABEVERSTÄRKER 1.180.710.81

P1
Normal: NF-Signal kommt über den Vorverstärker vom Wiedergabekopf

Extern: NF-Signal kann über externe Quelle (NF-Generator) eingespielen werden.

P2-P5
Wählt der Entzerrung (Gez. für eine Maschine mit 15"/30" Nominal Bandgeschwindigkeit).

WIEDERGABEVERSTÄRKER 1.180.710.82/.83

P1
Siehe P1 1.180.710.81

P2-P5
siehe P2-P5 1.180.710.81

Stellung A
Bei gedrückter Mute Taste wird nur im Umspulbetrieb bei den Kanälen, die nicht auf Input stehen, stummgeschaltet (siehe Abschnitt 4.1.4).

Stellung N
Normal; bei gedrückter Mute Taste werden alle Audio Ausgänge stummgeschaltet.

Nur für Wiedergabeverstärker ...83 mit BASS CORRECTION BOARD 1.180.728.00:

JS1
Position slow: für Maschinen mit 19 / 38 cm/s
Position fast: für Maschinen mit 38 / 76 cm/s

SYNCRSTÄRKER 1.180.711.81

P1
Narrow: Reduzierter Frequenzgang

Wide : Frequenzgang wie Wiedergabeverstärker (Übersprechverschlechterung).

P2-P5
siehe P2-P5 1.180.710.81

4.1.3
Jumper settings of the audio boards

REPRODUCE AMPLIFIER 1.180.710.81

P1
Normal: AF signal arrives from reproduce head via preamp

Extern: AF signal can be fed in from an external source (AF-generator).

P2-P5
Equalization selection (figure applies to recorder with 15/30ips nominal tape speed).

REPRODUCE AMPLIFIER 1.180.710.82/.83

P1
see P1 1.180.710.81

P2-P5
see P2-P5 1.180.710.81

Position A
When the mute button is pressed, only those channels that are not switched to input are muted during spooling mode (refer to section 4.1.4).

Position N
Normal; all audio outputs are muted when the mute button is pressed.

For Reproduce Amplifiers ...83 with BASS CORRECTION BOARD 1.180.728.00 only:

JS1
Position slow: for recorders with 7.5/ 15 ips tape speeds
Position fast: for recorders with 15 / 30 ips tape speeds

SYNC AMPLIFIER 1.180.711.81

P1
Narrow: reduced frequency response

Wide : frequency response corresponds to reproduce amplifier (inferior crosstalk attenuation).

P2-P5
see P2-P5 1.180.710.81

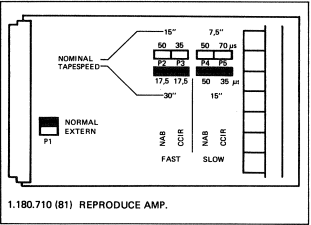


Fig. 4.1

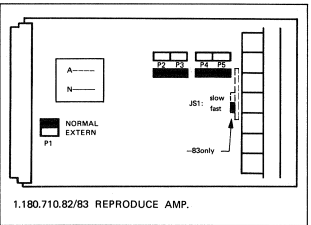


Fig. 4.2

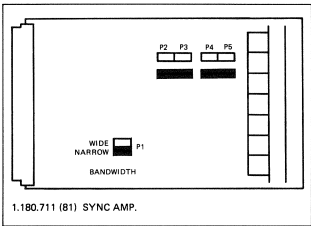


Fig. 4.3

AUFNAHMEVERSTÄRKER 1.180.712.81

P1-P4

siehe P2-P5 1.180.710.81

P5

Eingangsempfindlichkeit normal oder +7dB

RECORD AMPLIFIER 1.180.712.81

P1-P4

see P2-P5 1.180.710.81

P5

Input sensitivity normal or +7dB

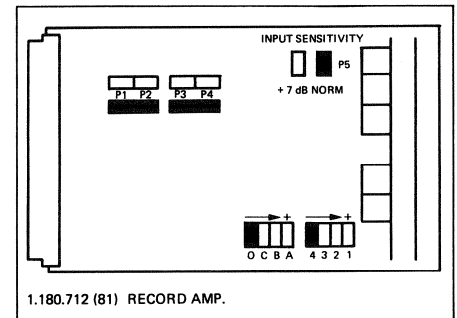


Fig. 4.4

P6

Jumper in Position 0 ergibt einen linearen Frequenzgang.

P6

influences the time constant (in position 0 a flat frequency response is obtained).

P7

beeinflusst die Verstärkung in Kombination mit P6.

P7

influences the gain in combination with P6

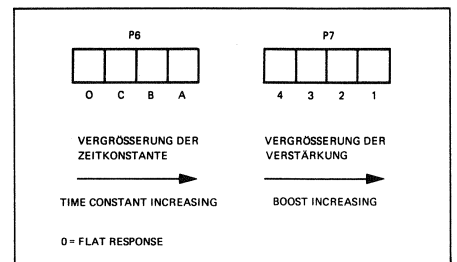


Fig. 4.5

HF-DRIVER 1.180.713.81

P1

Direkt: Die Schaltung berücksichtigt die Signale YPS-REC und Y-REC (nur für Servicezwecke).

HF-DRIVER 1.180.713.81

P1

Direct: The circuit ignores the signals YPS-REC and Y-REC (for service purposes only).

P2

Direkt: Die Schaltung berücksichtigt die Ready-Taste (S-REA) nicht (nur für Servicezwecke).

P2

Direct: The circuit ignores the signal from the Ready button (S-REA) in the Direct position (for service purposes only).

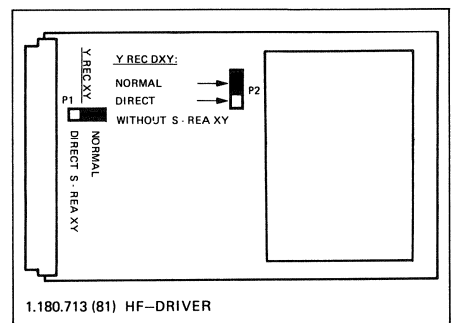


Fig. 4.6

MASTER OSCILLATOR 1.180.714.81

P1

Normal=Masteroszillator eingeschaltet

MASTER OSCILLATOR 1.180.714.81

P1

Normal= Oscillator switched on

P2

Masteroszillator ausgeschaltet

P2

Oscillator switched off

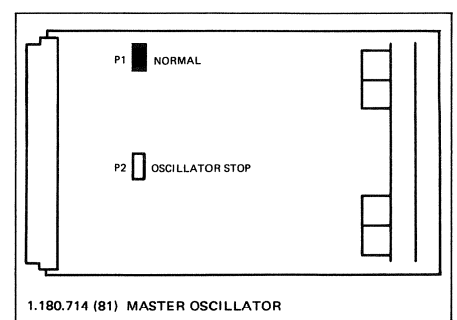


Fig. 4.7

DELAY CONTROLLER 1.180.551.00/.81

P2

Position A: Weiter Kopfträger, 2 Löschköpfe

P2

Position A: Wide headblock, 2 erase heads

Position B: Weiter Kopfträger, 1 Löschkopf

Position B: Wide headblock, 1 erase head

Position C: Enger Kopfträger, 1 Löschkopf

Position C: Narrow headblock, 1 erase head

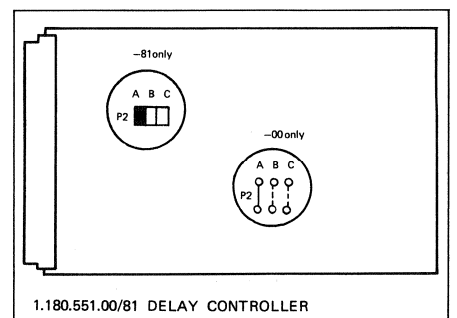


Fig. 4.8

4.1.4

Audio Funktionstabelle(Auto Input/Sync)

4.1.4

Audio function table (Auto Input/Sync)

Betriebsbedingungen:

- Output 1 auf Sync
- Autoinput gedrückt

Operating requirements:

- Output 1 in sync
- Auto input pressed

OPTIONEN			LEGENDE S SYNC M MUTE I INPUT S★ SYNC CHANNEL OPERATING (NO SENSIBLE SIGNAL) “READY” KEY DEPRESSED Y X “READY” KEY NOT DEPRESSED “SAFE”					
JUMPER ON AUDIO MASTER PANEL IN POSITION: B OR N (1.180.772–81)	JUMPER ON REPRODUCE AMPLIFIER IN POSITION: A OR N (1.180.710–82)	WIRE BRIDGE ON DELAY CONTROLLER PLUG PT. 16B CONNECTED WITH PT 31A (1.180.551–81)		TAPE SPEED = 0 STOP	TAPESPEED V ≠ 0			
				PLAY EDIT » « 	RECORD	TLS SAMPLING	» « TAPE IS NOT IN TOUCH WITH HEADS	
N	N	NO	MUTE OFF	I / I	S / S	S / I	M / M	I / I
			MUTE ON	M / M	M / M	M / M	M / M	
B	N	NO	MUTE OFF	I / I	S / S	S / I	M / M	I / I
			MUTE ON	I / I	S / S	S / I	M / M	M / M
B	A	NO	MUTE OFF	I / I	S / S	S / I	I / I	I / I
			MUTE ON	I / I	S / S	S / I	I / I	I / I
B	A	YES	MUTE OFF	S★ / I	S / S	S / I	M / I	S★ / I
			MUTE ON	S★ / I	S / S	S / I	M / I	M / I
N	N	YES	MUTE OFF	S★ / I	S / S	S / I	M / M	S★ / I
			MUTE ON	M / M	M / M	M / M	M / M	M / M
N	A	YES	MUTE OFF	S★ / I	S / S	S / I	M / I	S★ / I
			MUTE ON	M / I	M / M	M / I	M / I	M / I
N	A	NO	MUTE OFF	I / I	S / S	S / I	I / I	I / I
			MUTE ON	I / I	M / M	M / I	I / I	I / I
B	N	YES	MUTE OFF	S★ / I	S / S	S / I	M / M	S★ / I
			MUTE ON	S★ / I	S / S	S / I	M / M	M / M

⊗ MOST COMMON CASE

4.1.5

Einstellung der VU-Meter-Einheit

- Rückseite des VU-Meter-Racks öffnen.
- Stellung der Jumper, je nach gewähltem operating level kontrollieren. Folgende Leitungspegel können gewählt werden:
0, 4, 6 und 8 dBm.

VU-Meter-Einheit von hinten gesehen.

Das Bild zeigt den Jumper in der 6 dBm-Stellung.
Das VU-Meter zeigt somit 0 VU bei einem angelegten Leitungspegel von 6 dBm.

- Maschine ausschalten.
- Mechanischen Nullpunkt des VU-Meters einstellen.
- Alle externen Audio-Ausgangskabel entfernen.
- 1 kHz, operating level auf Buchse "METER" einspeisen.
- Mit [R1] VU-Meter-Anzeige auf 0 VU einstellen.

Wenn die Maschine mit transformatorlosen Ausgängen ausgestattet ist, muss folgendes beachtet werden:

- Der speisende Generator darf maximal 6 Ω Ausgangsimpedanz haben, da er durch die Ausgangsstufen belastet wird.
- Seine Ausgangsspannung (Pegel und Kurvenform) ist mit einem Oszilloskop zu kontrollieren.

Wenn kein niederohmiger Generator zur Verfügung steht, kann auch folgendermaßen vorgegangen werden:

- Eingangs- und Ausgangspegel abgleichen (siehe 4.1.6 und 4.1.7).
- Generator 1 kHz mit dem gewünschten operating level am Eingang des entsprechenden Kanals anschliessen, Maschine auf "INPUT".
- Ausgangspegel messen und VU-Meter-Anzeige entsprechend dem gewählten operating level mit [R1] einstellen.

4.1.5

Adjusting the VU-meter unit

- Open rear panel of VU-meter rack.
- Check jumper position, depending on operating level, The following line levels can be selected:

0, 4, 6, and 8 dBm.

Rear view of VU-meter unit.

In this illustration the jumper is in the 6 dBm position.
The VU-meter thus indicates 0 VU when the available line level is 6 dBm.

- Switch recorder off.
- Adjust mechanical zero of VU-meter.
- Remove all external audio cables.
- Feed in 1 kHz with operating level on "METER" socket.
- Adjust VU-meter reading to 0 VU by means of [R1].

If the recorder is equipped with transformerless outputs, the following has to be considered:

- The output impedance of the supplying AF generator has to be less than 6 Ω because of loading by the output stages.
- It's output voltage (level and sine wave form) is to be monitored with an oscilloscope.

If no low-impedance AF generator is available, the adjustment can be made as follows:

- Perform input and output level adjustment (see 4.1.6 and 4.1.7).
- Connect AF generator 1 kHz with the desired operating level to the input of the corresponding channel, recorder on "INPUT".
- Measure output level and adjust VU-meter reading with [R1] according to the selected operating level.

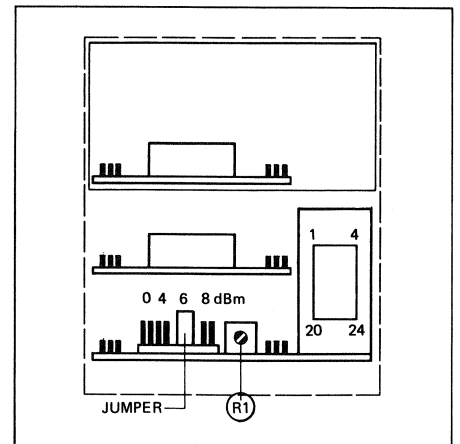


Fig. 4.9

4.1.6
Einstellung des Eingangspegels

- Audio Master, Output 1 auf "INPUT".
- Audio Master, Output 2 auf "INPUT".
- "CALIBRATE"-Taste drücken.
- Generator auf operating level 0, 4, 6 oder 8 dBm/1 kHz (700 Hz).
- Ausgang 1 mit "INPUT LEVEL" [1] auf -3 dBm bzw. -6 dBm einstellen, siehe die 2 folgenden Tabellen.
- VU-Meter-Anzeige bezogen auf den "LINE LEVEL" prüfen; siehe nachstehende Tabellen.
- Prüfen, ob der Ausgang 2 den selben Pegel wie Ausgang 1 ($\pm 0,5$ dB) anzeigt.
- "CALIBRATE"-Taste lösen.

4.1.6
Adjusting the input level

- Audio master, output 1 to INPUT.
- Audio master, output 2 to INPUT.
- Press "CALIBRATE" button.
- AF generator at operating level 0, 4, 6, or 8 dBm/1 kHz (700 Hz).
- Adjust output 1 with "INPUT LEVEL" [1] to -3 dBm or -6 dBm, refer to the 2 following tables.
- Check the VU-meter indication relative to "LINE LEVEL", refer to the following tables.
- Check whether the level indicated for output 2 is the same as for output 1 (± 0.5 dB).
- Release the "CALIBRATE" button.

Für folgende Tabelle gilt:

Bei Magnetisierungen ≥ 250 nWb/m für 0 dBm, den Output Level, in Calibrate Position, auf -3 dBm einstellen.

Parameters applicable to the following table:

For flux ≥ 250 nWb/m at 0 dBm, adjust the output level in calibrate position to -3 dBm.

VU-METER JUMPER POSITION	OPERATE POSITION		CALIBRATE POSITION	
	INPUT LEVEL	VU-METER INDICATION	OUTPUT * LEVEL	VU-METER INDICATION
0 dBm	0 dBm	0VU	-3 dBm	- 3VU
4 dBm	4 dBm	0VU	-3 dBm	- 7VU
6 dBm	6 dBm	0VU	-3 dBm	- 9VU
8 dBm	8 dBm	0VU	-3 dBm	-11VU

Für folgende Tabelle gilt:

Bei Magnetisierungen < 250 nWb/m für 0 dBm, den Output Level, in Calibrate Position, auf -6 dBm einstellen.

Parameters applicable to the following table:

For flux < 250 nWb/m at 0 dBm, adjust the output level in calibrate position to -6 dBm.

VU-METER JUMPER POSITION	OPERATE POSITION		CALIBRATE POSITION	
	INPUT LEVEL	VU-METER INDICATION	OUTPUT * LEVEL	VU-METER INDICATION
0 dBm	0 dBm	0VU	-6 dBm	- 6VU
4 dBm	4 dBm	0VU	-6 dBm	-10VU
6 dBm	6 dBm	0VU	-6 dBm	-12VU
8 dBm	8 dBm	0VU	-6 dBm	-14VU

* Der interne Level entspricht dem Output-Level, wenn die Taste "CALIBRATE" gedrückt ist.

* The internal level corresponds to the output level when the "CALIBRATE" button is depressed.

Beispiele:

Examples:

LINE LEVEL	TAPE FLUX	RESULTING INT. LEVEL
+6 dBm 0 dBm	510 nWb/m 255 nWb/m	-3 dBm
+4 dBm 0 dBm	200 nWb/m 126 nWb/m	-6 dBm

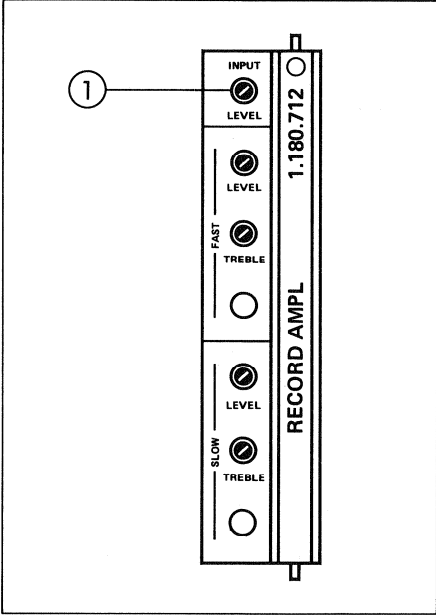


Fig. 4.10

4.1.7Einstellung des Ausgangspegels

- Audio Master, Output 1 auf "INPUT".
- Audio Master, Output 2 auf "INPUT".
- Generator auf Operating Level 0, 4, 6 oder 8 dBm/1 kHz (700 Hz).
- Ausgang 1 mit "OUTPUT 1 LEVEL" [1] auf Operating Level (für CCIR Peak Level) einstellen.
- Ausgang 2 mit "OUTPUT 2 LEVEL" [2] auf Operating Level (für CCIR Peak Level) einstellen.

4.1.7Adjusting the output level

- Audio master, output 1 switched to INPUT.
- Audio master, output 2 switched to INPUT.
- AF generator at operating level 0, 4, 6, or 8 dBm/1 kHz (700 Hz).
- Adjust output 1 with the aid of "OUTPUT 1 LEVEL" [1] to operating level (peak level for CCIR).
- Adjust output 2 with the aid of "OUTPUT 2 LEVEL" [2] to operating level (peak level for CCIR).

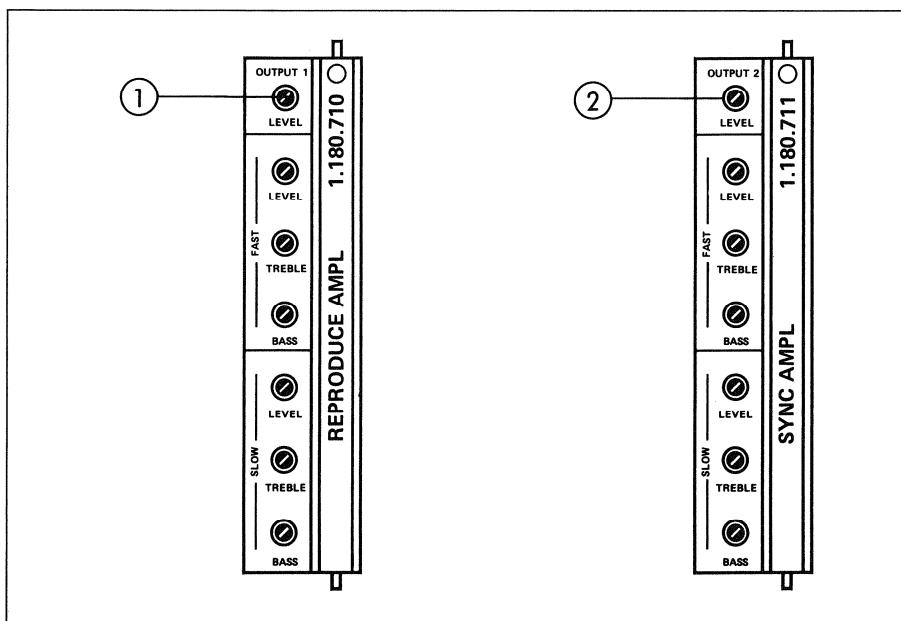


Fig. 4.11

4.2
Einstellung des Wiedergabeverstärkers

MASTER SAFE drücken

- Audio Master, Output 1 auf "REPRO".
- Audio Master, Output 2 auf "REPRO".
- Testband auflegen
- Entsprechende Entzerrung wählen (CCIR oder NAB).
- Entsprechende Bandgeschwindigkeit wählen.
- Maschine in Play starten.
- Folgende Einstellungen sind gemäss der Reihenfolge des Testbandes auszuführen.
- Ausgang 1 mit LEVEL [1] auf erforderlichen Pegel (siehe nachstehende Tabelle) einstellen.
- Wiedergabekopfspalt mit [4] einstellen (Phasenoptimum).
- Höhen mit TREBLE [2] einstellen.
- Bässe mit BASS [3] voreinstellen (siehe nachstehende Tabelle).

Frequenzgang bei folgenden Frequenzen voreinstellen:

SPEED	7,5 / 15 / 30 ips
LEVEL	1kHz (700Hz)
TREBLE	10kHz
BASS	50Hz

Ueberprüfen des Frequenzganges gemäss technischem Datenblatt.

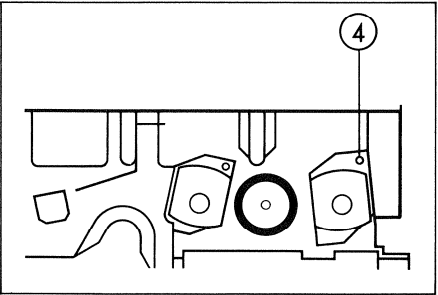


Fig. 4.13
Weiter Kopfträger
Wide headblock

4.2
Adjusting the reproduce amplifier

Press MASTER SAFE

- Audio master, output 1 switched to REPRO.
- Audio master, output 2 switched to REPRO.
- Mount testing tape
- Select applicable equalization (NAB or CCIR).
- Select applicable tape speed.
- Start recorder in play mode.
- The following adjustments are to be performed in the sequence corresponding to the test recordings on the reference tape:
- Adjust output 1 with the aid of "LEVEL" [1] to the required level (refer to the following table).
- Align azimuth of reproducing head with [4] (phase optimum).
- Preadjust high frequencies with "TREBLE" [2].
- Preadjust low frequencies with "BASS" [3] (refer to the following table).

Preadjust frequency response with the following frequencies:

SPEED	7,5 / 15 / 30 ips
LEVEL	1kHz (700Hz)
TREBLE	10kHz
BASS	50Hz

Check frequency response against the technical specification sheet.

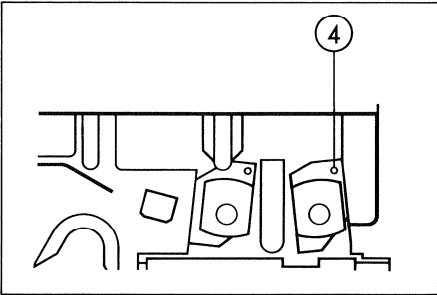


Fig. 4.14
Enger Kopfträger
Narrow headblock

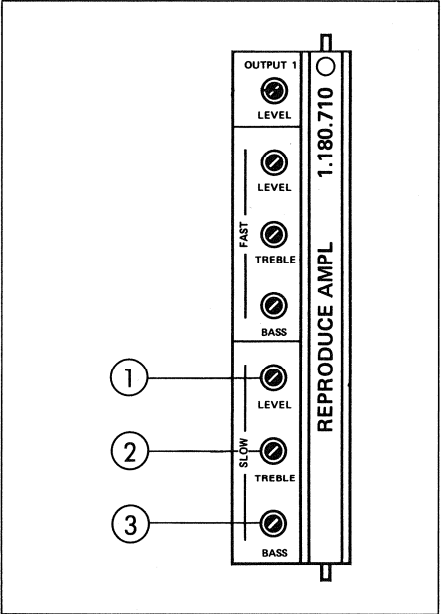


Fig. 4.12

4.3

Einstellung des Mastersoszillators,
LöschteilHinweis:

Sofern auf eine andere Bandsorte umgemessen werden soll, vereinfacht sich die Einmessung. Die Anleitung ist in diesem Fall ab Abschnitt 4.6 zu benutzen.

- Maschine auf "SLOW SPEED".
- Spannung auf Minijack [A] mit "ERASE SLOW" [1] gemäss Tabelle 1 einstellen.
- Maschine auf "HIGH SPEED".
- Spannung auf Minijack [A] mit "ERASE FAST" [2] gemäss folgender Tabelle 1 einstellen.

4.3

Adjusting the master oscillator, erase sectionNote:

If the recorder is to be recalibrated for a different type of tape, the adjustment procedures can be simplified. Refer to instructions in section 4.6.

- Switch recorder to slow speed.
- Adjust voltage at mini jack [A] with "ERASE SLOW" [1] according to the specifications in table 1.
- Switch recorder to high speed.
- Adjust voltage at mini jack [A] with "ERASE FAST" [2] according to the specifications in table 1.

Einstellungen mit RMS-Voltmeter:

TYPE OF MACHINE	2 ERASEHEADS	INLINE ERASEHEAD
8 / 16 CHANNEL	1,5V RMS	1,2V RMS
24 CHANNEL	1,2V RMS	1,0V RMS

Tabelle 1

Adjusting with RMS-Voltmeter:

TYPE OF MACHINE	2 ERASEHEADS	INLINE ERASEHEAD
8 / 16 CHANNEL	1,5V RMS	1,2V RMS
24 CHANNEL	1,2V RMS	1,0V RMS

Table 1

Wichtig:

Diese Messung erfordert ein gutes RMS-Breitband-Voltmeter, obere Grenzfrequenz mindestens 100kHz. Ansonsten ist ein gutes Oszilloskop zu verwenden; in diesem Fall gilt Tabelle 2.

Important:

For this calibration a high-quality wideband voltmeter with an upper limit frequency of at least 100kHz will be required. A high-quality oscilloscope can also be used in which case the specifications in table 2 are applicable:

Einstellungen mit Oszilloskop :

TYPE OF MACHINE	2 ERASEHEADS	INLINE ERASEHEAD
8 / 16 CHANNEL	4,2V PEAK TO PEAK	3,4V PEAK TO PEAK
24 CHANNEL	3,4V PEAK TO PEAK	2,8V PEAK TO PEAK

Tabelle 2

Adjustments with oscilloscope:

TYPE OF MACHINE	2 ERASEHEADS	INLINE ERASEHEAD
8 / 16 CHANNEL	4,2V PEAK TO PEAK	3,4V PEAK TO PEAK
24 CHANNEL	3,4V PEAK TO PEAK	2,8V PEAK TO PEAK

Table 2

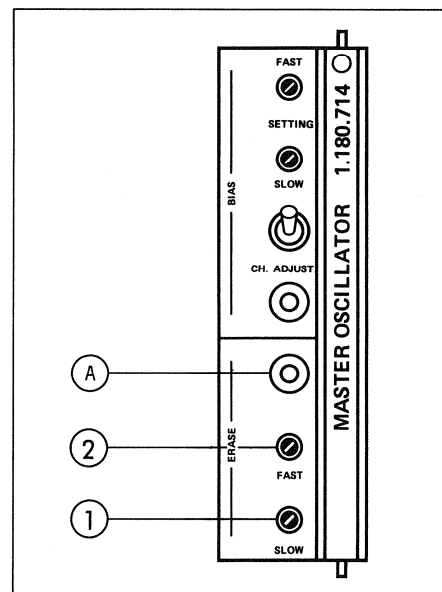


Fig. 4.15

4.4 Einstellungen des HF-Drivers, Löschteil

Hinweis:

Sofern auf ein anderes Band umgemessen werden soll, vereinfacht sich die Einstellung. Die Anleitung ist in diesem Fall ab Abschnitt 4.6 zu benützen.

- Maschine auf beliebige Geschwindigkeit schalten.
- Entsprechendes Aufnahmeband auflegen.
- Alle Kanäle auf "RECORD".
- Mit "TUNING" [2] auf kleinste Helligkeit von LED "OUT OF TUNE" [y] abgleichen.
- Nach Abgleich des letzten Kanales nochmals die Löschespannung am Masteroszillator Abschnitt 4.3 messen und nachjustieren, wenn nötig.
- Mit gutem RMS-Breitbandvoltmeter, obere Grenzfrequenz mindestens 100kHz, an MiniJack [A] Löschstrom messen.

4.4 Adjusting the HF driver, erase section

Note:

If the recorder is to be recalibrated for a different type of tape, the adjustment procedures can be simplified. Refer to section 4.6.

- Switch recorder to any tape speed.
- Mount corresponding recording tape.
- Switch all channels to "RECORD".
- Adjust for minimum brightness at "Out of tune" LED [Y] with the aid of "TUNING" [2].
- After the last channel has been adjusted, recheck the erase voltage at the master oscillator as described in section 4.3 and readjust if necessary.
- Measure the erase current at mini jack [A] with the aid of a high-quality, wideband RMS voltmeter (upper limit frequency at least 100kHz).

Wichtig:

Die Spannung von 120mV, die über einem 10hm Widerstand gemessen wird, entspricht dem maximal zulässigen Löschstrom, typisch 50 - 100mV. Sofern ein Oszilloskop verwendet wird, sollte die Spannung 340mV Spitze-Spitze nicht überschreiten, typisch: 140 - 280mV Spitze-Spitze.

Important:

The 120mV measured across a 1 Ohm resistor correspond to the maximum admissible erase current, typical 50-100mV. If an oscilloscope is used, the maximum voltage should not exceed 340mV_{pp}, Typical: 140 - 280mV_{pp}.

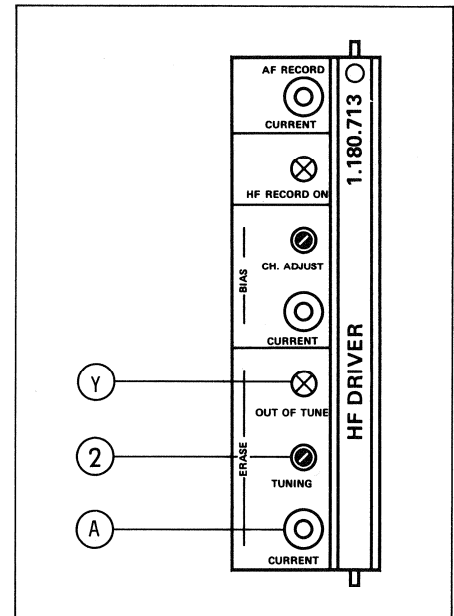


Fig. 4.16

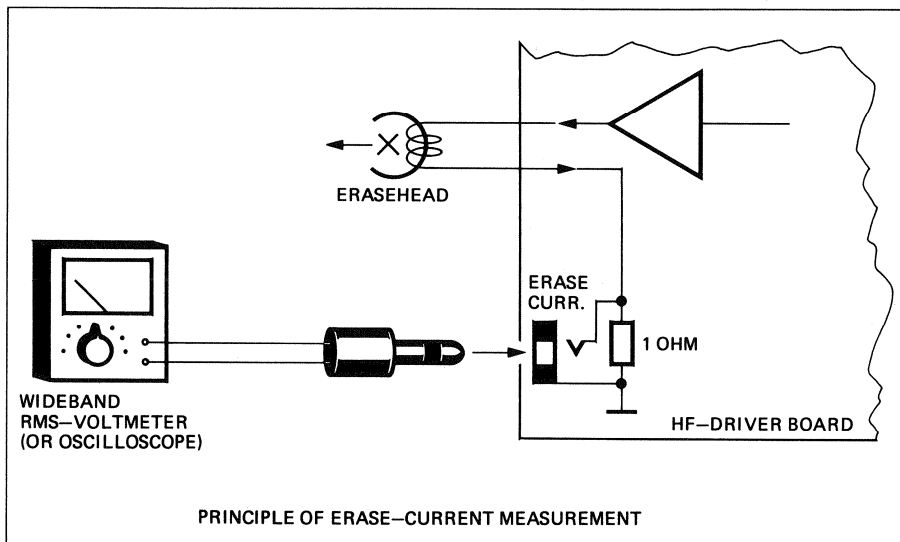


Fig. 4.17

4.5 Bias-Voreinstellung

4.5.1 Masteroszillator Bias-Voreinstellung

Hinweis:

Sofern auf ein anderes Band umgemessen werden soll, vereinfacht sich die Einmessung. Die Anleitung ist in diesem Fall ab Abschnitt 4.6 zu benutzen.

- Maschine auf beliebige Geschwindigkeit schalten.
- Schalter [1] auf "CH. ADJUST" (nach unten).
- An Minijack [A] mit gutem RMS-Breitbandvoltmeter, obere Grenzfrequenz mindestens 300kHz, prüfen, ob 2V RMS ($\pm 100\text{mV}$) anliegen. Ansonsten ist ein Oszillograph zu gebrauchen. Der auf dem Bildschirm angezeigte Wert soll 5,6V Peak-Peak ($\pm 280\text{mV}$) betragen. Bei Abweichung Spannung wie folgt justieren:

Vorgehen:

Masteroszillator auf Verlängerungsprint stecken.

Achtung:

Nie bei eingeschalteter Maschine Print ein-, oder ausstecken.

Die 2V-Spannung ($\pm 100\text{mV}$) mit Potmeter [R40] einstellen.

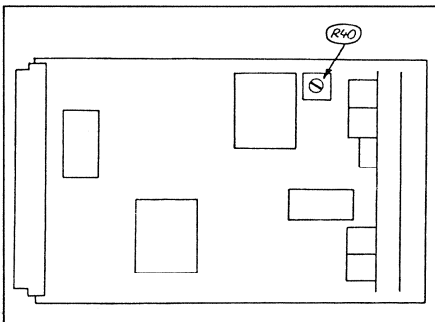


Fig. 4.19

4.5 Bias preadjustment

4.5.1 Master oscillator bias preadjustment

Note:

If the recorder is to be recalibrated for a different type of tape, the adjustment procedures can be simplified. Refer to section 4.6.

- Switch recorder to any tape speed.
- Set switch [1] to "CH. ADJUST" (lower position).
- Check, with the aid of a high-quality wideband RMS voltmeter, upper limit frequency at least 300kHz, whether 2V RMS ($\pm 100\text{mV}$) are available at mini jack [A]. If an oscilloscope is used, the value indicated on the screen should be 5.6Vpp ($\pm 280\text{mV}$). In the event of a voltage deviation adjust as follows:

Procedure:

Mount master oscillator on extension board.

Caution:

Do not remove or plug in any circuit boards while the recorder is switched on!

Adjust for 2V ($\pm 100\text{mV}$) with potmeter [R40].

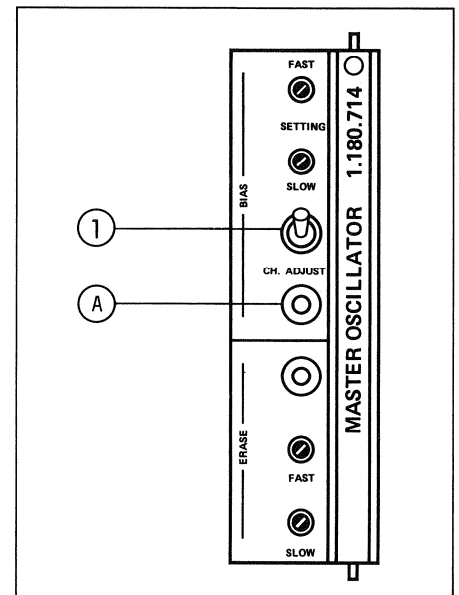


Fig. 4.18

4.5.2

HF-Driver Bias Voreinstellung

Hinweis:

Sofern auf ein anderes Band umgemessen werden soll, vereinfacht sich die Einmessung. Die Anleitung ist in diesem Fall ab Abschnitt 4.6 zu benutzen.

- Audio Master, Output 1 auf "REPRO".
- Maschine auf "SLOW SPEED".
- Passendes Aufnahmeband auflegen: Wir empfehlen ein 3M 250 für diese Einstellung zu verwenden, um sicher zu sein, dass der Biasbereich auf dem MASTER OSCILLATOR für alle Bandtypen gross genug ist.
- Alle Kanäle auf "RECORD".
- Generator auf 10kHz, 10 oder 20dB unter operating level (-10dB gilt nur für 15/30ips Maschinen, für 7,5/15ips Maschine gilt -20dB).
- [3] auf "CH ADJUST" (Schalterstellung nach unten).
- "BIAS FAST + SLOW" [1] [2] an linken Anschlag.
- Durch Drehen von "BIAS CH.ADJUST" [4] maximum Pegel auf Output 1 suchen und dann solange im Uhrzeigersinn weiterdrehen, bis Output 1 3dB unter dem erreichten Maximum zu liegen kommt. Dieser -3dB Punkt gilt nur für 15/30ips Maschinen, für 7,5/15ips liegt dieser Punkt bei -6dB (siehe nachstehende Tabelle).

4.5.2

HF driver bias preadjustment

Note:

If the recorder is to be recalibrated for a different type of tape, the adjustment procedure can be simplified. Refer to section 4.6.

- Audio master output 1, switched to "REPRO".
- Switch recorder to slow speed.
- Mount corresponding recording tape: type 3M 250 is recommended for this measurement to ensure that the bias range on the master oscillator will be large enough for all tape types.
- Switch all channels to "RECORD".
- Set a generator to 10kHz, 10 or 20dB below operating level (-10dB only applies to 15/30 ips recorders, -20dB applies to 7.5/15 ips recorders).
- Set switch [3] "CH.ADJUST" to lower position.
- "BIAS FAST + SLOW" [1] and [2] to counterclockwise limit position.
- Search for maximum level on output 1 by turning "BIAS CH.ADJUST" [4] and then continue to rotate clockwise until output 1 drops to -3dB below the previously reached maximum. This setting of -3dB only applies to 15/30 ips recorders, for 7.5/15 ips recorders this value should be -6dB (refer to the following figure).

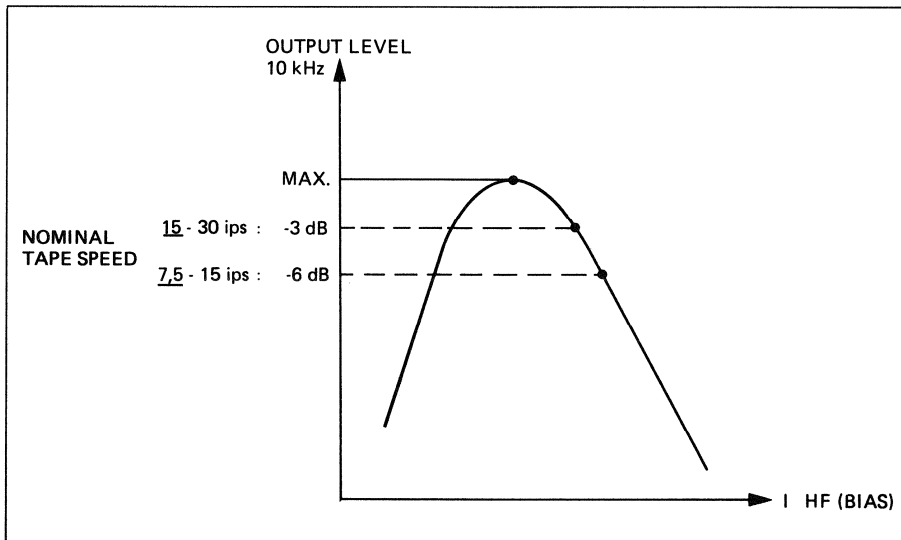


Fig. 4.21

- Master Oszillator "CH.ADJUST" [3] retour in Normalstellung.
- Restore master oscillator "CH.ADJUST" switch to its normal position.

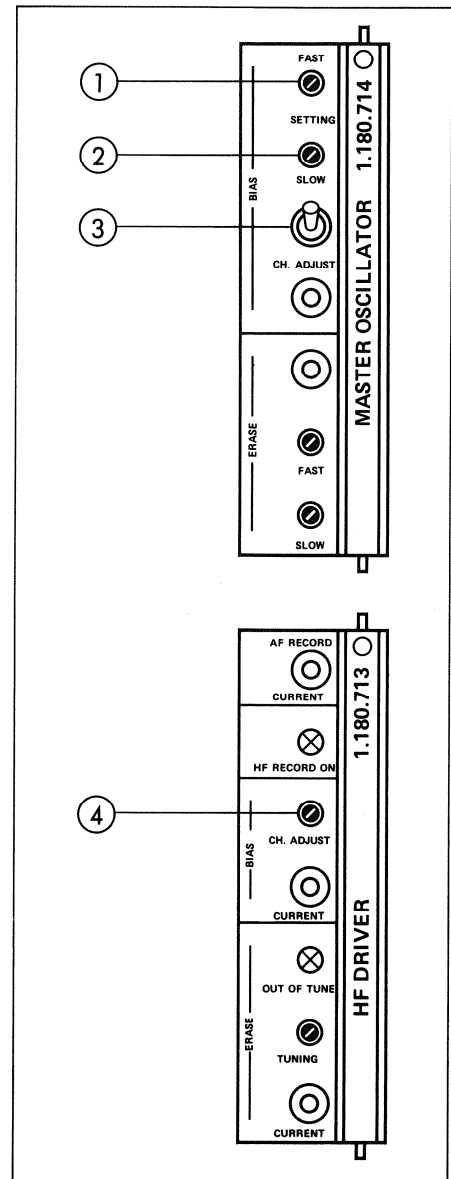


Fig. 4.20

4.6

Bias Einstellung

4.6.1

Masteroszillator Bias EinstellungHinweis:

Wird auf eine andere Bandsorte umgemessen, kann die Bias-Einstellung zentral für alle Kanäle vorgenommen werden. Entsprechend sind die Level sowie die Treble Regler bei jedem Kanal nachzustellen.

- Audio Master, Output 1 auf "REPRO".
- Maschine auf "SLOW SPEED".
- Passendes Aufnahmeband auflegen.
- "CH. ADJUST" [3] auf Normalstellung (Schalterstellung nach oben).
- Alle Kanäle auf "RECORD".
- Generator auf 10kHz, 10 oder 20dB unter operating level (-10dB gilt nur für 15/30ips Maschinen, für 7,5/15ips Maschine gilt -20dB).
- Durch Drehen von "BIAS SETTING SLOW" [2] maximum Pegel auf Output 1 suchen, und dann solange im Uhrzeigersinn drehen, bis Output 1 "x" dB unter dem erreichten Maximum ist. "x" ist der BIAS-Punkt in dB, je nach Band, siehe Bias-Tabelle Abschnitt 4.6.2.
- Maschine auf "HIGH SPEED".
- Analoges Vorgehen wie für die langsame Geschwindigkeit, aber mit Trimmer "BIAS SETTING FAST" [1] arbeiten.

4.6

Bias adjustment

4.6.1

Master oscillator bias adjustmentNote:

If the recorder is to be recalibrated for a different type of tape, the bias adjustment can be made in common for all channels. However, the "LEVEL" and the "TREBLE" controls must be readjusted for each channel.

- Audio master, output 1 switched to "REPRO".
- Switch machine to slow speed.
- Mount corresponding recording tape.
- "CH.ADJUST" [3] to its normal (upper position).
- Switch all channels to "RECORD".
- Set a generator to 10kHz, 10 or 20dB below operating level (-10dB applies to 15/30 ips recorders, -20dB applies to 7.5/15 ips recorders).
- Search for maximum level on output 1 by turning "BIAS SETTING SLOW" [2] and then continue to rotate clockwise until output 1 drops "X" dB below the previously reached maximum where "X" represents the bias position in dB, depending on the type of tape, refer to bias table section 4.6.2.
- Switch recorder to high speed.
- Repeat foregoing steps, however this time adjust with potmeter "BIAS SETTING FAST" [1].

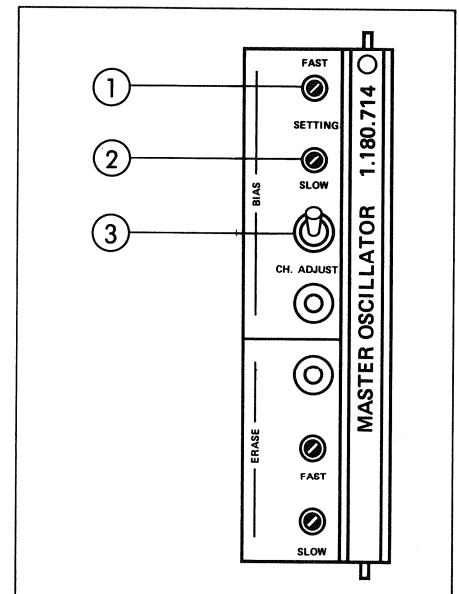


Fig. 4.22

4.6.2

Bias Tabelle in dB

Wir empfehlen folgende BIAS-EINSTELLUNGEN (ΔE 10kHz).

4.6.2

Bias table in dB

We recommend the following BIAS-SETTINGS (ΔE 10kHz).

Bandsorte Type of tape	9,5 cm/s 3.75 ips	19 cm/s 7.5 ips	38 cm/s 15 ips	76 cm/s 30 ips
AGFA PEM 468	6	6	3.5	1.5
AGFA PER 525	6	6	3	1
AGFA PER 528	6	6	3.5	1.5
AMPEX 406	6	5	3	1.5
AMPEX 456 GRAND MASTER	5	6.5	3.5	1.5
BASF LGR 30P	6	6	4	1.5
BASF LGR 50P	6	6	4	1.5
BASF LGR 51	6	6	4	2.5
BASF SPR 50LH/50LHL	6	5.5	3.5	1.5
BASF STUDIO MASTER 910	5	6	4.5	1.5
BASF STUDIO MASTER 911	6	8	4.5	3
EMI 816/817	6	6.5	4	1.5
PYRAL CJ90	6	6.5	3.5	1.5
SCOTCH (3M) 206	5.5	5.5	3	1.5
SCOTCH (3M) 226	6	6	3.5	1.5
SCOTCH (3M) 250	5	6	3.5	1
SCOTCH (3M) 256	6	6.5	3.5	1
SCOTCH (3M) 263	6	6	3	1

Fig. 4.23

4.7

Einstellung des Aufnahmeverstärkers

- Audio Master, Output 1 auf "REPRO".
- Entsprechende Entzerrung wählen (CCIR oder NAB)
- Passendes Aufnahmeband auflegen.
- Alle Kanäle auf "RECORD".
- Generator auf 10kHz, operating level.
- Aufnahmekopfspalt mit [4] einstellen.
- Generator auf 1kHz oder 700Hz, operating level stellen.
- Pegel mit LEVEL [1] einstellen.
- Frequenzgang 20dB unter line level einstellen (Regler [2] [3]).

Frequenzgang bei folgenden Frequenzen einstellen:

SPEED	7,5 / 15 / 30 ips
LEVEL	1kHz (700Hz)
TREBLE	12kHz
BASS	50Hz

- Ueberprüfen des Frequenzganges gemäss technischem Datenblatt:

7,5ips	15ips	30ips
30Hz -15kHz +2dB -3dB	30Hz -20kHz ±2dB	50Hz -20kHz ±2dB
60Hz -12kHz ±1dB	60Hz -18kHz ±1dB	60Hz -20kHz ±1dB

4.7

Adjusting the record amplifier

- Audio master, output 1 switched to "REPRO".
- Select applicable equalization (NAB or CCIR).
- Mount corresponding tape.
- Switch all channels to "REPRO".
- Set generator to 10kHz, operating level.
- Adjust azimuth with screw [4].
- Set generator to 1kHz or 700Hz, operating level.
- Adjust level with "LEVEL" [1].
- Set frequency response to 20dB below line level (potmeters [2] and [3]).

Adjust frequency response for the following frequencies:

SPEED	7,5 / 15 / 30 ips
LEVEL	1kHz (700Hz)
TREBLE	12kHz
BASS	50Hz

- Check the frequency response against values in technical specification sheet:

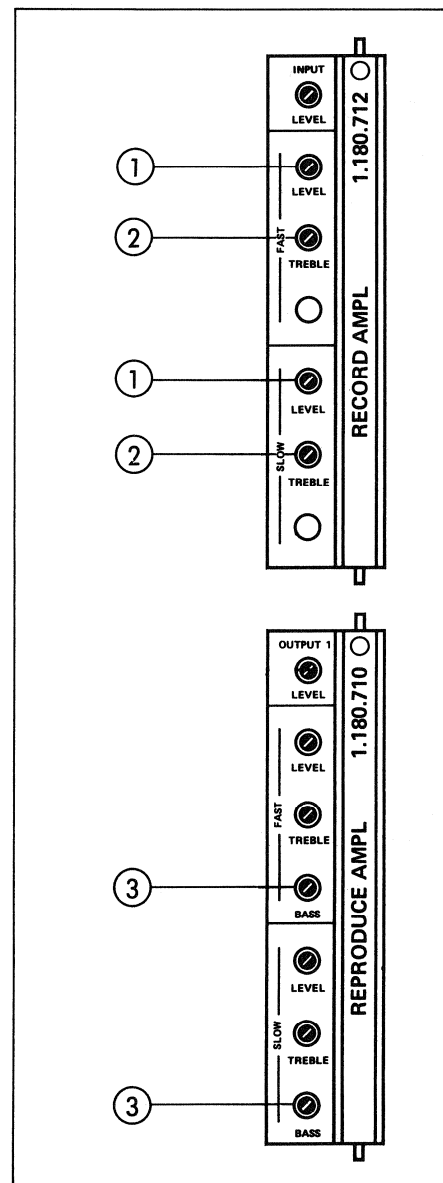


Fig. 4.24

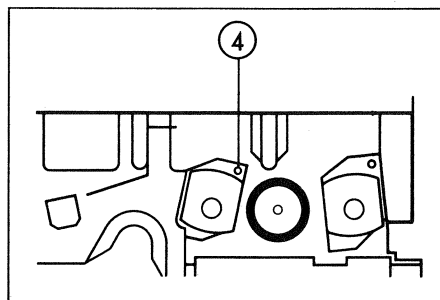


Fig. 4.25
Weiter Kopfträger
Wide headblock

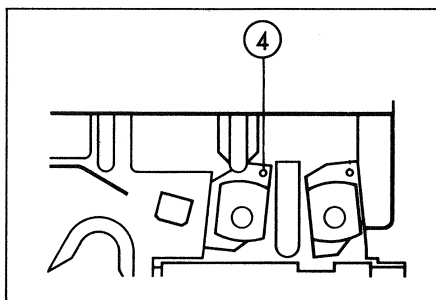


Fig. 4.26
Enger Kopfträger
Narrow headblock

4.8

Einstellung des Sync-VerstärkersHinweis:

Überprüfe Jumper Position Narrow/Wide, Abschnitt 4.1.3.

- Audio Master, Output 1 auf "SYNC".
- Audio Master, Output 2 auf "SYNC".
- Entsprechende Entzerrung wählen (CCIR oder NAB).
- Maschine auf "SLOW SPEED".
- Passendes Aufnahmeband auflegen.
- Alle Kanäle auf "RECORD".
- Tape counter auf null setzen.
- Folgende Testreihenfolge bei 20dB unter operation level aufnehmen:
3 Min., 1kHz (700Hz für NAB)
3 Min., 10kHz
3 Min., 50Hz
- "ZERO LOC" und dann "PLAY" drücken.
- Pegel mit LEVEL [1] einstellen.
- Prüfe Ausgang 2 ob gleicher Pegel $\pm 0,5\text{dB}$ vorhanden.
- Höhen mit TREBLE [2] einstellen.
- Bässe mit BASS [3] einstellen.

Hinweis:

Obige Synceinmessung kann auch ab Messband erfolgen.

Frequenzgang bei folgenden Frequenzen voreinstellen:

SPEED	7.5/15/30 ips
LEVEL	1kHz (700Hz)
TREBLE	10kHz *
BASS	50Hz

* 8kHz in Stellung narrow bei 7,5ips.

4.8

Adjusting the sync amplifierNote:

Check jumper setting narrow/wide, section 4.1.3.

- Audio master, output 1 switched to "SYNC".
- Audio master, output 2 switched to "SYNC".
- Select applicable equalization (NAB or CCIR).
- Switch recorder to slow speed.
- Mount corresponding recording tape.
- Switch all channels to "RECORD".
- Reset tape counter to zero.
- Record the following test sequence with 20dB below operating level:
3min, 1kHz (700Hz for NAB)
3min, 10kHz
3min, 50Hz
- Press "ZERO LOC" followed by "PLAY".
- Adjust level with "LEVEL" [1].
- Check whether the same level ($\pm 0.5\text{dB}$) is available at output 2.
- Adjust high frequencies with "TREBLE" [2].
- Adjust low frequencies with "BASS" [3].

Note:

The foregoing sync calibrations can also be made with a reference tape.

Preadjust frequency response for the following frequencies:

SPEED	7.5/15/30 ips
LEVEL	1kHz (700Hz)
TREBLE	10kHz *
BASS	50Hz

* 8kHz in narrow position for 7.5 ips tape speed

- Überprüfen des Frequenzganges gemäss technischem Datenblatt:

Check frequency response against values in technical specification sheet:

7,5ips	15ips	30ips
narrow: 30Hz -8kHz $\pm 2\text{dB}$	30Hz -12kHz $\pm 2\text{dB}$	50Hz -12kHz $\pm 2\text{dB}$
wide: 30Hz -10kHz $\pm 2\text{dB}$	30Hz -18kHz $\pm 2\text{dB}$	50Hz -20kHz $\pm 2\text{dB}$

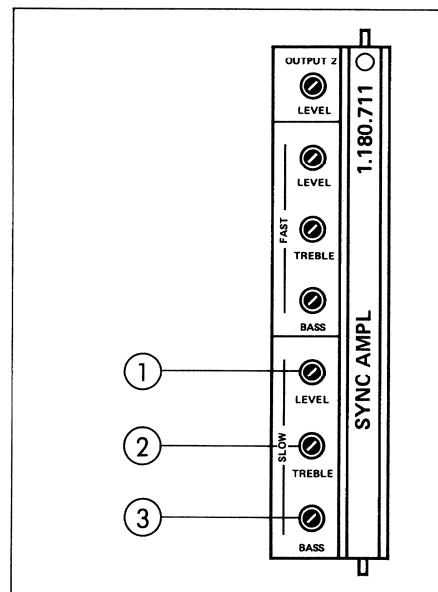


Fig. 4.27

4.9Einstellanleitung zu A800 mit eisenlosen Ein- und Ausgängen

Die A800 mit eisenlosen Audio Ein- und Ausgängen umfasst folgende neue Baugruppen pro Kanal:

- Record amplifier 1.180.715.00
- VU-Meter unit 1.180.786.00
mit zwei
- Line output amplifiers 1.180.797.00

Wichtig

Die folgenden Einstellungen sind bei neuen Maschinen schon werkseitig vorgenommen worden. Nach einer Reparatur müssen die nachstehenden Werte jedoch überprüft und nötigenfalls korrigiert werden!

4.9Adjusting the A800 with trafoless in- and outputs

The A800 with trafoless in- and outputs comprises the following new assemblies per channel:

- Record amplifier 1.180.715.00
- VU-meter unit 1.180.786.00
including two
- Line output amplifiers 1.180.797.00

Important

The following adjustments have been done by the manufacturer. Check the values after repair and readjust if necessary.

4.9.1Einstellung des Record Amplifiers 1.180.715.00Gleichtaktunterdrückungsmessung(CMRR)Vorbereitung:

Beide Eingänge (XLR-Stecker CH Input) A-Line und B-Line verbinden und folgende Frequenzen einspeisen (gegen Masse gemessen):

- 1kHz resp. 20kHz (Peak oder Leistungspegel)
- NF-Voltmeter an Ausgang 1 oder 2 anschliessen
- Im Feld AUDIO MASTER auf dem Master Panel der A800 beide Ausgänge auf INPUT schalten.

4.9.1Adjusting the record amplifier 1.180.715.00Common mode rejection ratio (CMRR)Preparatory steps:

Connect both inputs (XLR connectors CH Input) A-line and B-line with each other and feed in the following frequencies referring to ground (chassis):

- 1kHz resp. 20kHz (at peak or operating level)
- Connect an AF voltmeter to output 1 or 2.
- Depress both INPUT buttons on the master panel of the A800 in the AUDIO MASTER field.

Einstellvorgang:

- $f_1=1\text{kHz}$ einspeisen und mit Regler R104 auf minimale Ausgangsspannung abgleichen.

$\leq -40\text{dB}$ typ. -50dB

- $f_2=20\text{kHz}$ einspeisen und mit Drehkondensator C102 auf minimale Ausgangsspannung abgleichen.

$\leq -40\text{dB}$ typ. -50dB

- Bei beiden Frequenzen Ausgang nochmals prüfen und nötigenfalls nachstellen.

Procedure:

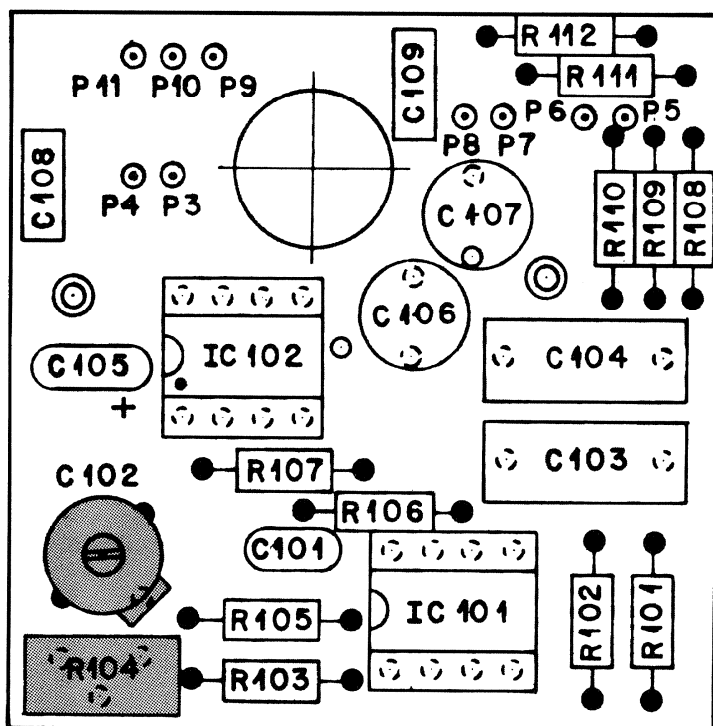
- Feed in $f_1=1\text{kHz}$ adjust to minimum output level with R104.

$\leq -40\text{dB}$ typ. -50dB

- Feed in $f_2=20\text{kHz}$ adjust with C102 to minimum output level.

$\leq -40\text{dB}$ typ. -50dB

- Check both frequencies again and readjust if necessary.



LINE INPUT AMPLIFIER 1.180.727.00

4.9.2

Einstellung des Line Output Amplifiers
1.180.797.00Symmetrie der Ausgangssignale

- 1kHz am Eingang einspeisen (Peak oder Leitungspegel)
- Symmetrie an A-Line und B-Line gegen Masse prüfen.
- Wenn nötig mit Regler R31 nachstellen.
Diese Messung kann mit einem Oszilloskop oder mit einem NF-Voltmeter durchgeführt werden.

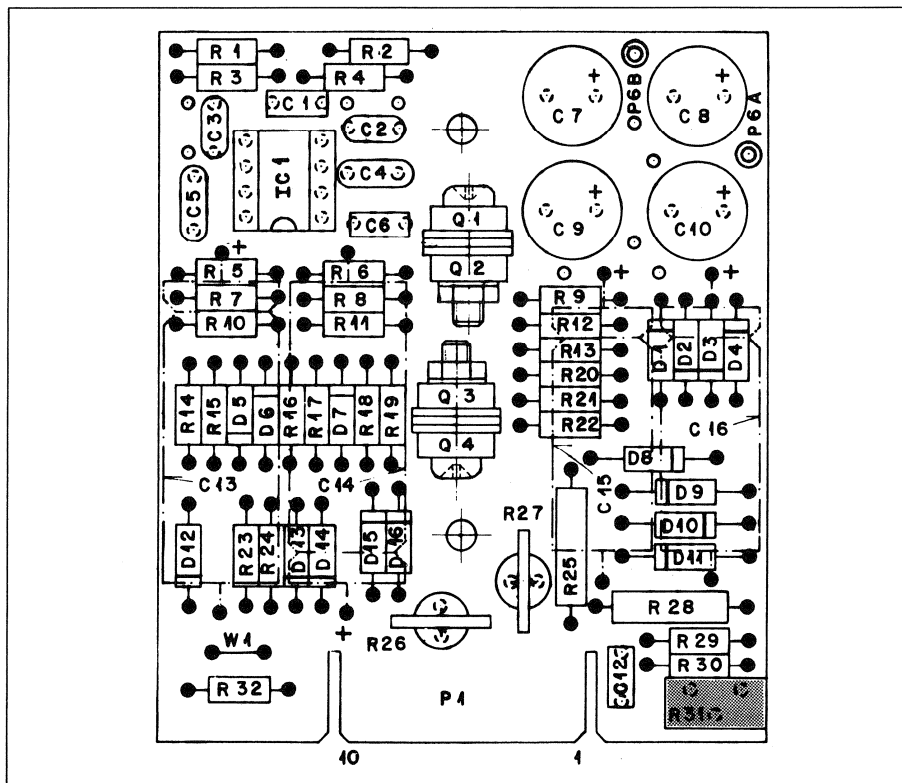
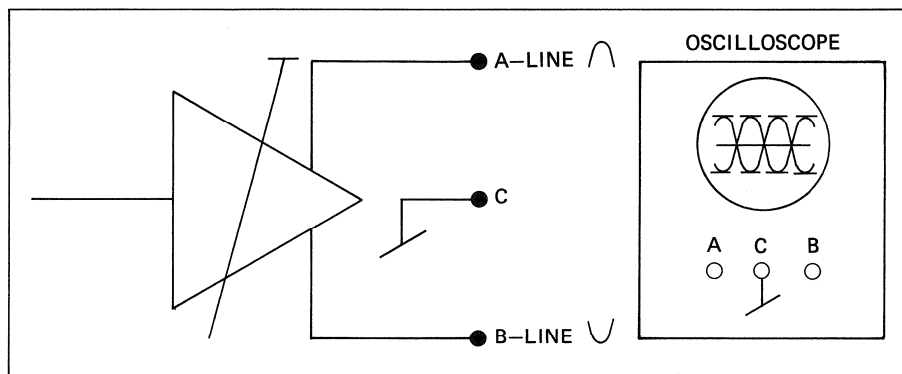
4.9.2

Adjusting the line output amplifier
1.180.797.00Symmetry of the output signals

- Feed in 1kHz (at peak or operating level).
- Check the symmetry of the A and B line referring to ground (chassis).

- Adjust with R31 if necessary.

These adjustments can be done with the aid of an oscilloscope or an AF voltmeter.



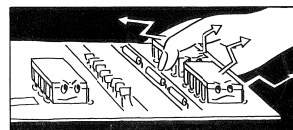
LINE OUTPUT AMPLIFIER 1.180.797.00

CONTENTS / TAPE DECK CONTROL UNIT 1.180.010

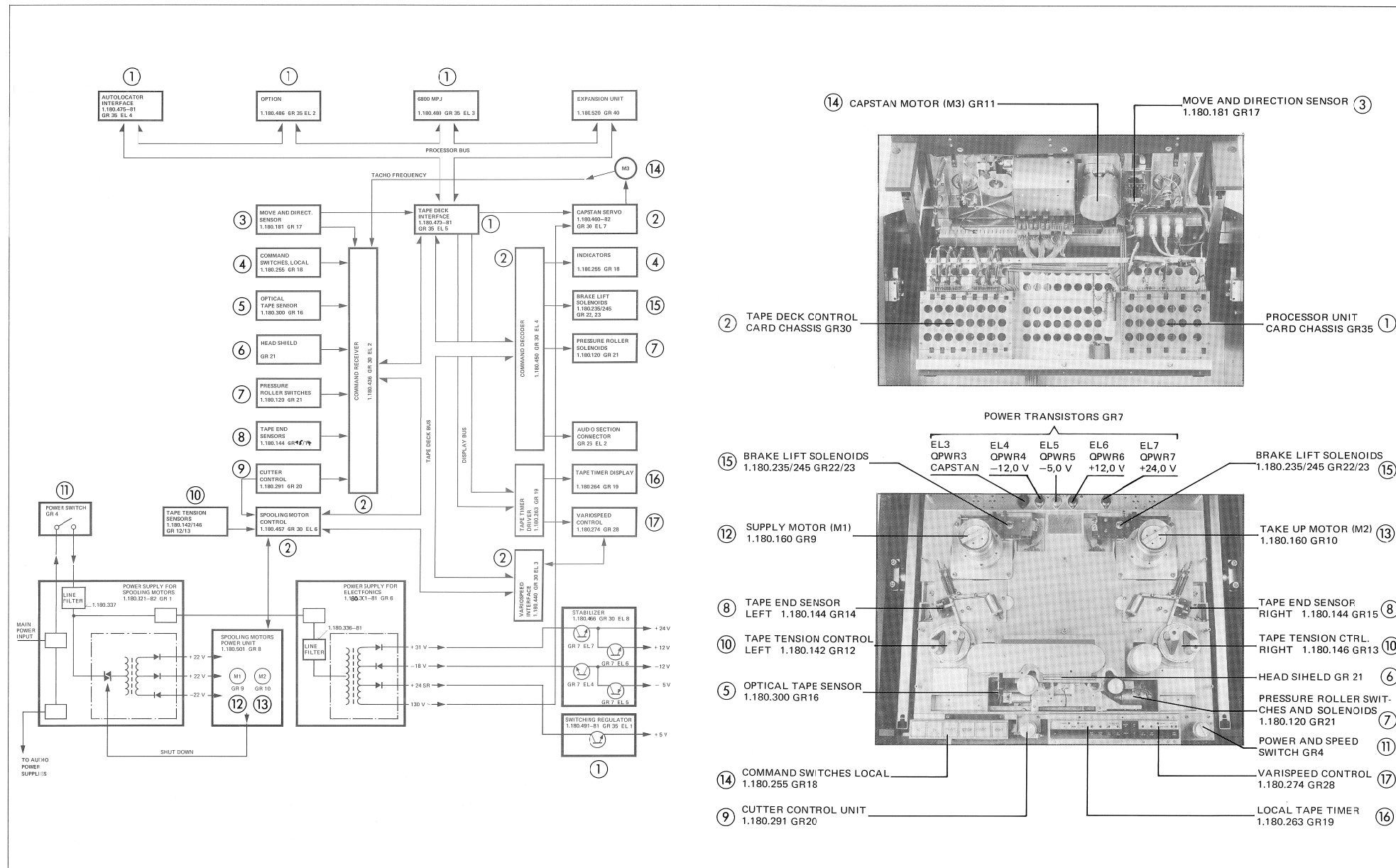
GR/EL	DESCRIPTION	SCHEMATIC NO.	SECTION/PAGE
	TAPE DECK CONTROL / BLOCK DIAGRAM		5/2
	POWER SUPPLY'S / BLOCK DIAGRAM		5/3
GR1	POWER SUPPLY FOR SPOOLING MOTORS	1.180.321-82	5/4
	— LINE SWITCH PCB	1.180.335	5/4
	— LINE FILTER PCB	1.180.337	5/4
GR6	POWER SUPPLY UNIT FOR ELECTRONICS	1.180.301-81	5/6
	— RECTIFIER PCB	1.180.315-81	5/6
	— LINE FILTER PCB	1.180.336-81	5/6
GR8	SPOOLING MOTOR POWER UNIT	1.180.501-00/-81	5/8
GR8 EL8	— SPOOLING MOTOR INTERCONNECTION PCB	1.180.512	5/9
GR8	SPOOLING MOTOR POWER UNIT	1.180.500-83	5/12
GR8 EL8	— SPOOLING MOTOR INTERCONNECTION PCB	1.180.511-83	5/13
GR17	TAPE MOVE AND DIRECTION SENSOR UNIT	1.180.181	5/16
	— MOVE AND DIRECTION SENSOR PCB	1.180.185	5/16
GR18	COMMAND SWITCHES UNIT LOCAL	1.180.255	5/17
GR18 EL18	— COMMAND SWITCHES PCB	1.180.257	5/17
GR19/28	TAPE TIMER AND VARIOSPEED CONTROL UNIT	1.180.260	5/19
GR19 EL2	TIMER AND VARIOSPEED DISPLAY DRIVER	1.180.263	5/20
GR19 EL1	TIMER DISPLAY PC CARD	1.180.264	5/22
GR28 EL1	VARIABLE SPEED CONTROL	1.180.274	5/24
GR12/13	TAPE TENSION CONTROL LEFT/RIGHT	1.180.142/146	5/26
GR14/15	TAPE END SENSOR PCB LEFT/RIGHT	1.180.144	5/27
GR20	CUTTER CONTROL UNIT	1.180.291	5/28
GR21	PRESSURE ROLLER UNIT	1.180.120	5/29
GR22/23	BRAKE LIFT SOLENOIDS	1.180.235/245	5/30
GR30	TAPE DECK CONTROL UNIT / CARD CHASSIS	1.180.402	5/31
GR30 EL2	COMMAND RECEIVER PCB	1.180.436-81/-82	5/32
GR30 EL3	VARIOSPEED INTERFACE PCB	1.180.440	5/36
GR30 EL4	COMMAND DECODER PCB	1.180.450	5/38
GR30 EL6/7	SERVO LOOP / FUNCTION DIAGRAM		5/40
GR30 EL6	SPOOLING MOTOR CONTROL PCB	1.180.457	▲ 5/41
GR30 EL6	SPOOLING MOTOR CONTROL PCB	1.180.455-82	▲ 5/46
GR30 EL7	CAPSTAN SERVO PCB	1.180.460-82	5/50
GR30 EL8	STABILIZER PCB	1.180.466-81	5/54
GR30 EL8	STABILIZER PCB	1.180.465	5/56
GR31	TAPE DECK REMOTE CONTROL CONNECTION		5/58
	ADDITIONAL TAPE DECK REMOTE CONTROL CONNECTOR UNIT	1.180.090	5/58
GR35	PROCESSOR UNIT / CARD CHASSIS	1.180.405	5/59
GR35 EL1	SWITCHING REGULATOR PCB	1.180.491-81	5/60
GR35 EL2	REMOTE EXPANSION PCB	1.180.486-00/-81	5/62
GR35 EL3	6800 MPU 2 PCB	1.180.480/482/484	▲ 5/63
GR35 EL4	AUTOLOCATOR INTERFACE PCB	1.180.475-84/-85/-88	▲ 5/67
GR35 EL5	TAPE DECK INTERFACE PCB	1.180.472-00	▲ 5/73
	OSCILLATOR PCB / 13 MHz	1.180.471	5/78
GR35 EL5	TAPE DECK INTERFACE PCB	1.180.470-83/81	5/79
	LOCATION PIN LIST		5/87
	SIGNAL WIRE LIST		5/97



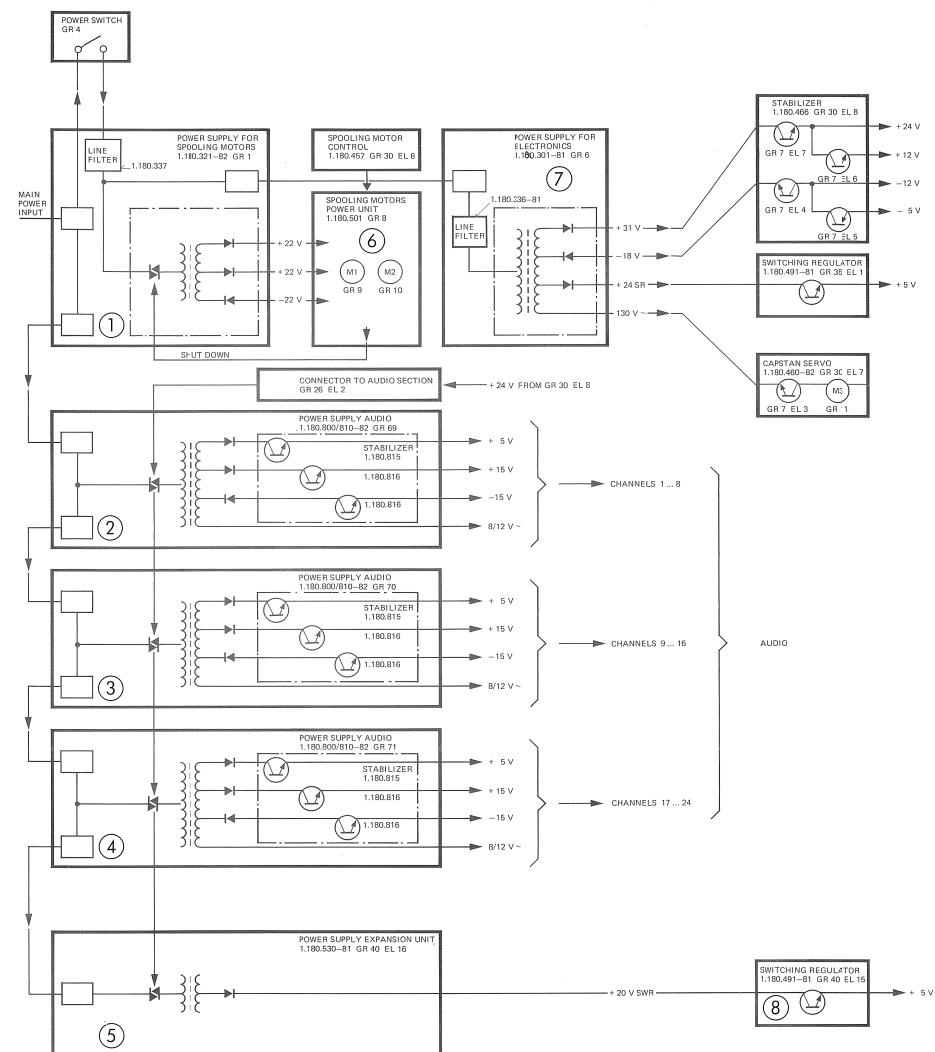
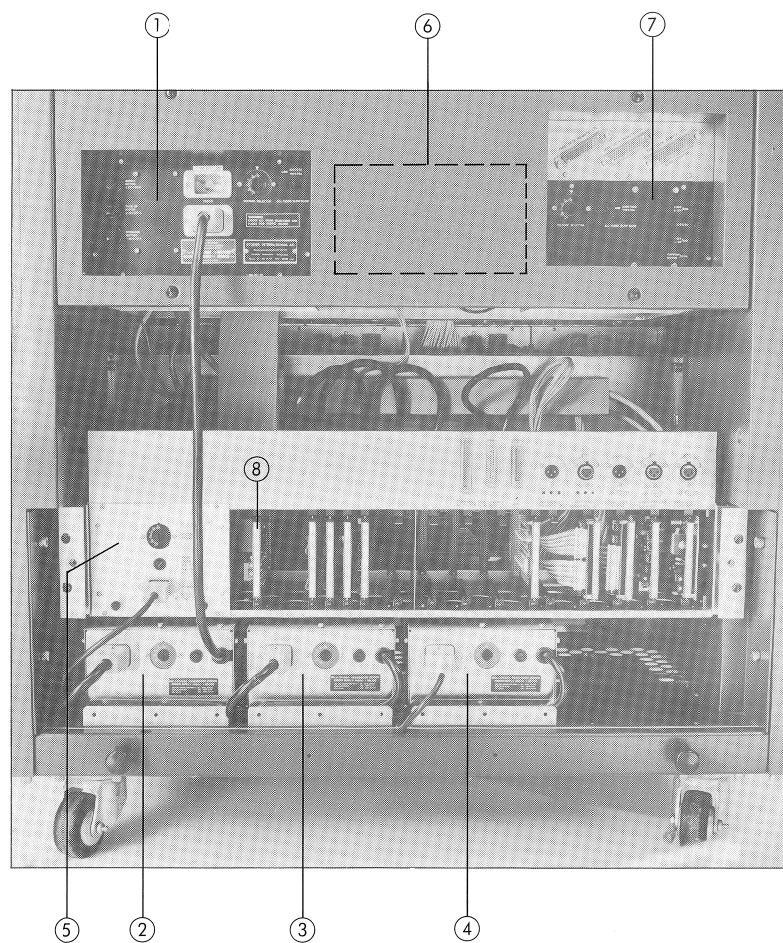
ALL PCBs MARKED WITH THIS SIGN ▲
CONTAIN COMPONENTS SENSITIVE TO
STATIC CHARGES.
PLEASE, REFER TO PREFACE BEFORE
YOU REMOVE THESE BOARDS.



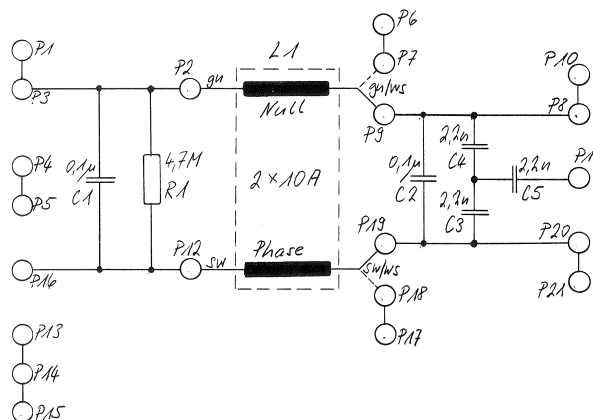
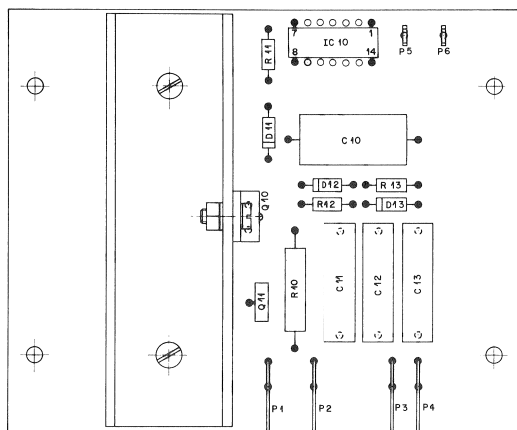
TAPE DECK CONTROL / BLOCK DIAGRAM



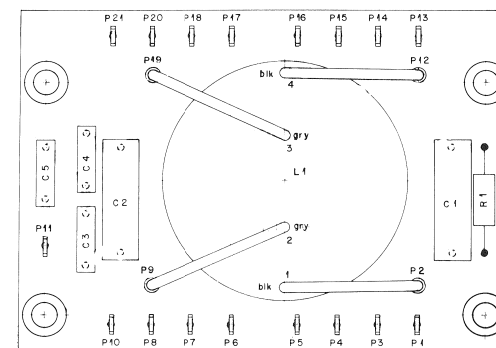
POWER SUPPLY'S / BLOCK DIAGRAM



LINE SWITCH PCB 1.180.335



LINE FILTER PCB 1.180.337



L1 RD 52-10 2x 10A 2x 1,8cmH

IND	POS NO	PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MFR
	A 01	1.180.333		Line/wireless PC Card	
	C 01	59.26.6103	10 M	-10% 40 V EL	
	C 02	59.26.6103	10 M		
	C 03	59.26.6103	10 M		
	C 04	59.26.6103	10 M		
	C 05	59.26.6103	10 M		
	C 06	59.26.6103	10 M		
	D 01	70.01.0231	BTW 61	35V, 27A	SI
	D 02	70.01.0231	BTW 61		
	D 03	70.01.0231	BTW 61		
	F 01	51.01.0273	4.0 AT	5 x 20	
	F 02	51.01.0265	20 AT	6.3 x 32	
	F 03	51.01.0265	20 AT		
	F 04	51.01.0265	20 AT		
1	PL 1	1.180.337		Line-Filter 2x10 A	
	J 01	54.04.0111		Plug	
	J 02	54.04.0112		Plug/socket	
	J 03	54.02.0403	5-Pole	Connector	
	J 04	54.02.0421	8-Pole	Connector	
	MP 1	52.02.2107	2x4Pole	Solder strip	
	R 01	57.56.4471	470	5% 4.2W	
	R 02	57.56.4471	470		
	R 03	57.56.4471	470		

W/O	DATE	NAME	
①			
②			
③	12.11.80	W - 82	
④	5.12.19	Wth/gv	

STUDER	Power Supply Unit f.SP.Motors	1.180 321-82	PAGE 1 OF 2
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[illegible]

IND	DATE	NAME			
①			St = STUDER		
②					
③					
④	12.11.80	St - 82			
⑤	5.12.79	Wch/gr			
STUDER			Power Supply Unit f.SP.Motors	1.180.321-82	PAGE 2 of 2

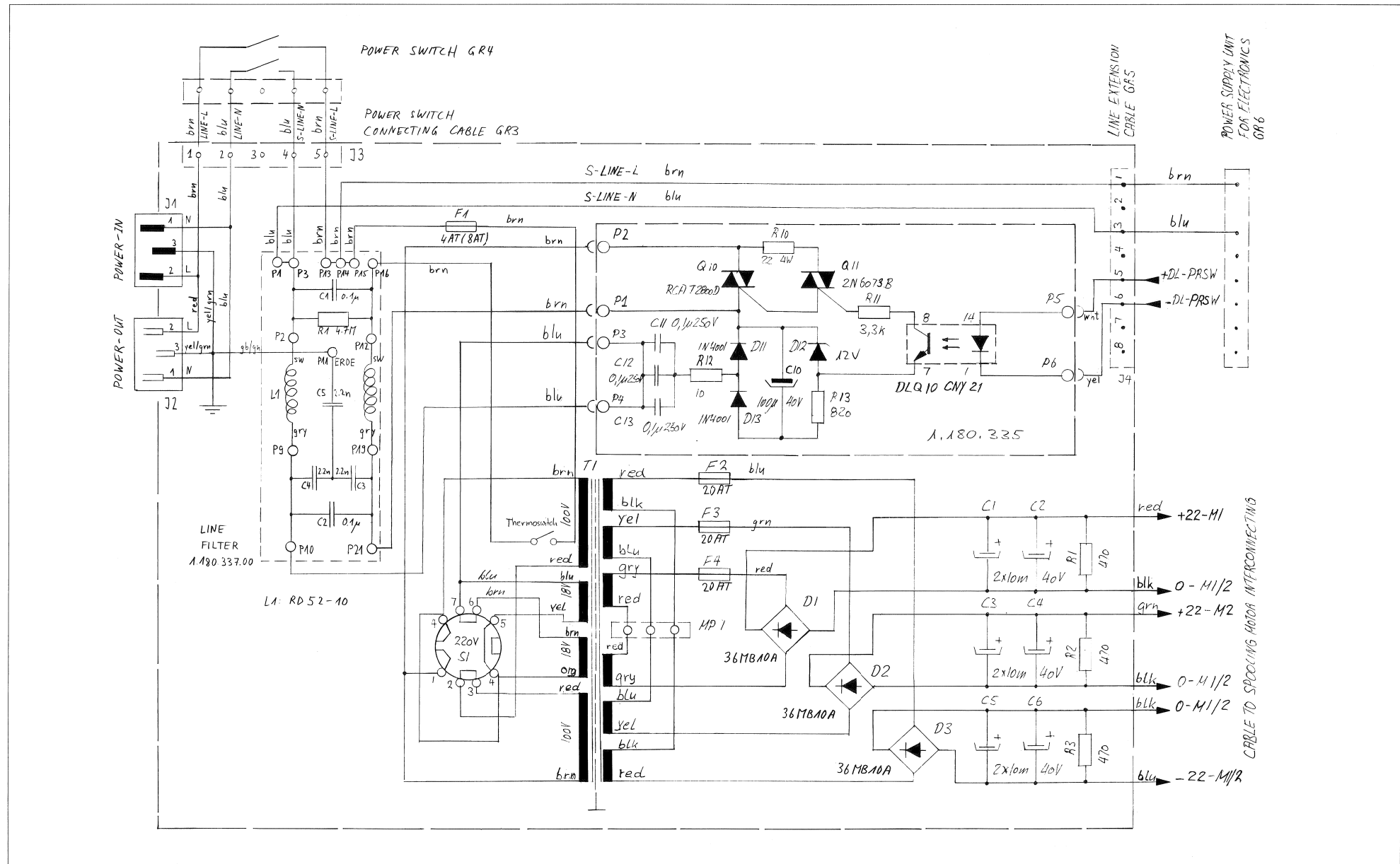
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C 10		59.25.5101	100 U	EL	
C 11		59.99.0453	0.1 U	250V MP	
C 12		59.99.0453	0.1 U		
C 13		59.99.0453	0.1 U		
D 11		50.04.0122	1M4001	SI	
D 12		50.04.1117	12V	5% 4W Z	
D 13		50.04.0122	1M4001	SI	
DELQ 1C		50.99.0120	CRY 21	OPTRO	T, E
P1-4		54.02.0328	2.8 x 0.8	Plug	
P5-6		54.02.0320	2.8 x 0.8	Plug	
Q 10		50.99.0106	T2B00	Triac 400V 8A	RCA
Q 11		50.99.0119	2N6073B	Triac 400V 4A	M
R 10		57.56.5220	22	10% 4 W	
R 11		57.11.4332	3.3 k	5% .25W CF	
R 12		57.02.4100	10		
R 13		57.11.4821	820		

IND	DATE	NAME	
④			E = Elfein
③			T = Telefunken
②			M = Motorola
①			
○	8.12.78	Wth/gv	
STUDER		LINE SWITCH PC CARD	1.180.335
			PAGE 1 OF 1

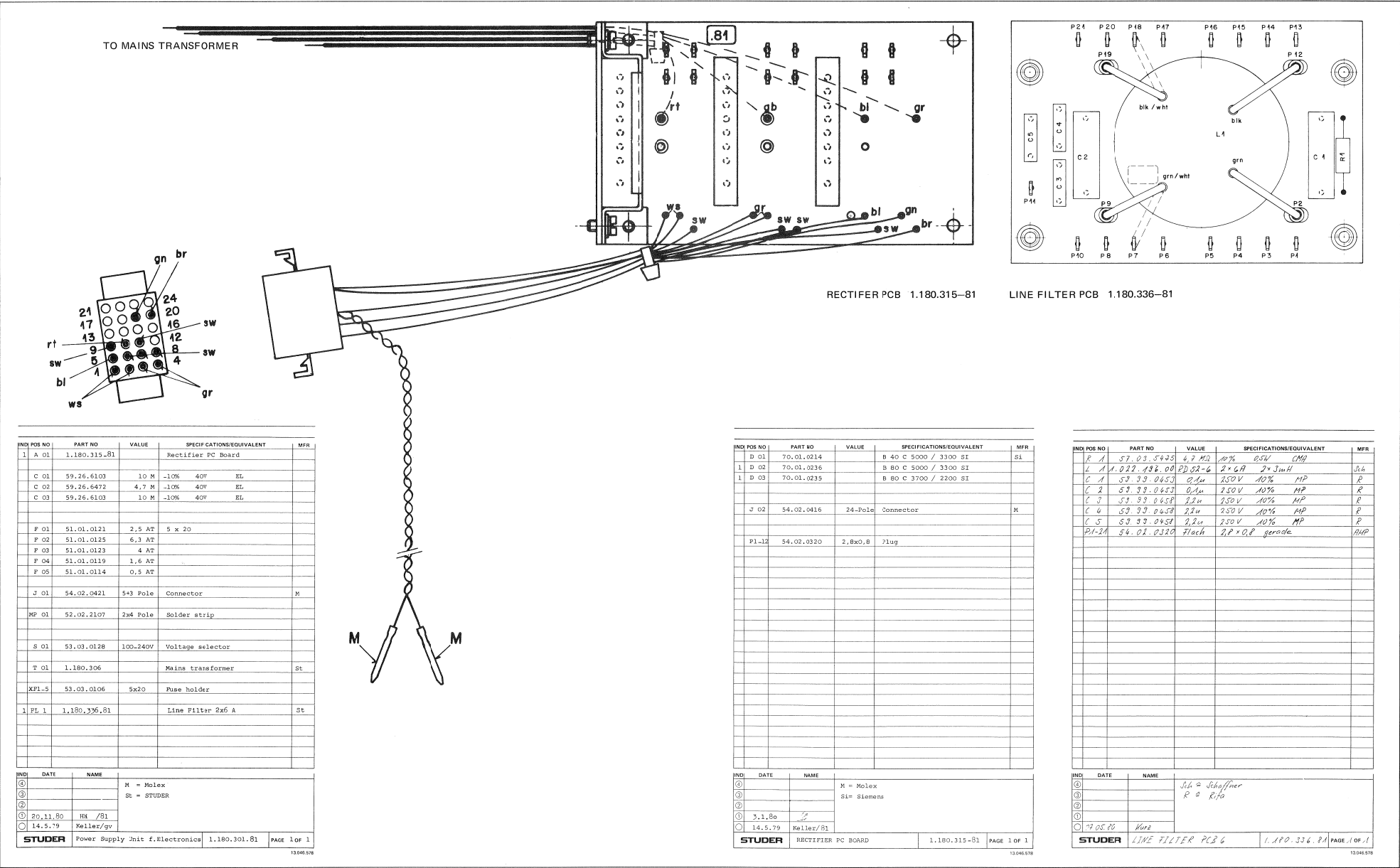
[illegible]

IND	DATE	NAME	
⑤			Sch & Schaffner
④			
③			
②			
①			
○	77.05.80	Kurz	

STUDER	LINZ FILTER PCB 10	1.180.337.00	PAGE 1 OF 1
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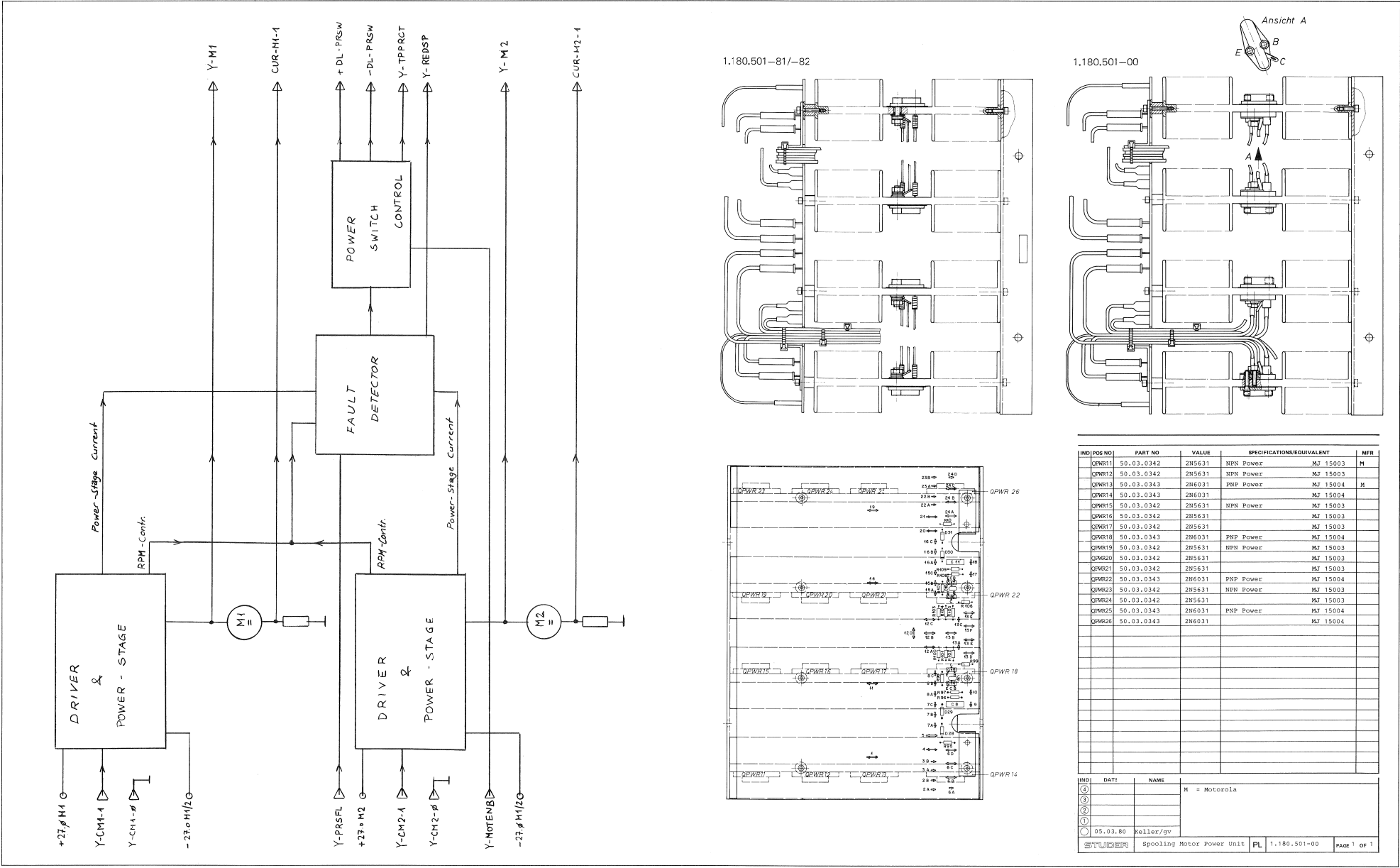


POWER SUPPLY FOR ELECTRONICS 1.180.301-81 GR6



[illegible]

SPOOLING MOTOR POWER UNIT 1.180.501-00/-81/-82 GR8



SPOOLING MOTOR POWER UNIT 1.180.501-00/-81/-82 GR8

INDI POS NO	PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MFR
10001	50.03.0507	2N5686	NPN Power	M
10002	50.03.0507	2N5686	NPN Power	
10003	50.03.0506	2N5684	PNP Power	M
10004	50.03.0506	2N5684	PNP Power	
10005	50.03.0507	2N5686	NPN Power	
10006	50.03.0507	2N5686	NPN Power	
10007	50.03.0507	2N5686	NPN Power	
10008	50.03.0506	2N5684	PNP Power	
10009	50.03.0507	2N5686	NPN Power	
10010	50.03.0507	2N5686	NPN Power	
10011	50.03.0507	2N5686	NPN Power	
10012	50.03.0506	2N5684	PNP Power	
10013	50.03.0507	2N5686	NPN Power	
10014	50.03.0507	2N5686	NPN Power	
10015	50.03.0506	2N5684	PNP Power	
10016	50.03.0506	2N5684	PNP Power	

INDI	DATE	NAME	
①			M = Motorola
②			
③			
④			
⑤	22.1.80	Heller	
⑥			
⑦			
⑧			
⑨			
⑩			
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⑬			
⑭			
⑮			
⑯			
⑰			
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STUDER SPOOLING MOTOR POWER UNIT 1.180.501-82-81 PAGE 1 OF 1

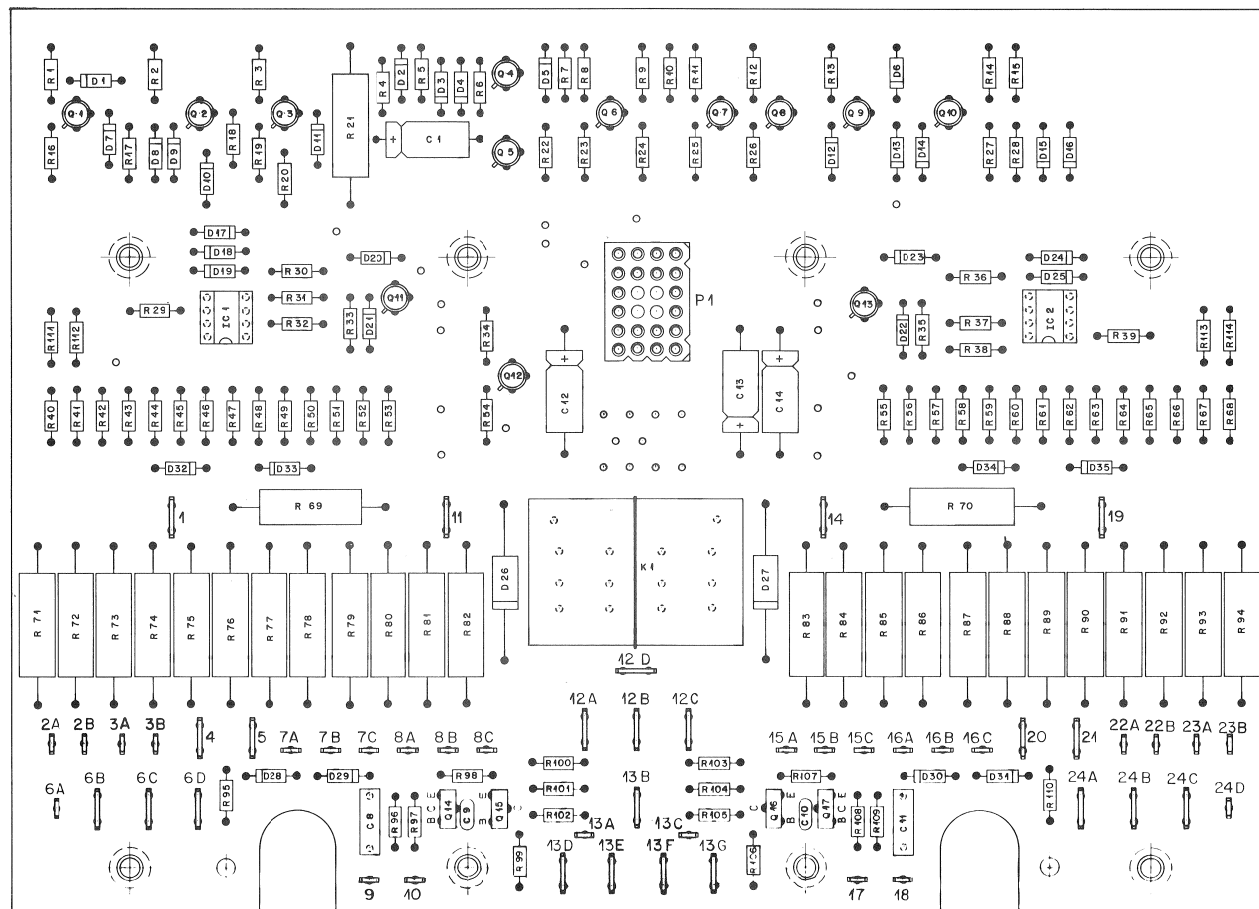
INDI POS NO	PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MFR
C1	5725.5220	22p	40 V -10% +50% EL	
C2				
C3				
C4				
C5				
C6				
C7				
C8	5938.6224	220n	100 V ±10% HPETP	
C9	5939.1101	100pf	63 V ±40% CER	
C10	5939.1101	100pf	63 V ±40% CER	
C11	5938.6224	220n	100 V ±10% HPETP	
C12,18	5938.6224	220n	100 V ±10% HPETP	
C14	5938.6224	220n	100 V ±10% HPETP	
D1	5004.0125	1N4004	75 V 1 V/100mA	P Tr
D2				
D3				
D4	5004.0125	1N4004	75 V 1 V/100mA	P Tr
D5	5004.0125	1N4004	75 V 1 V/100mA	P Tr
D6				
D7				
D8				
D9				
D10	5004.0125	1N4004	75 V 1 V/100mA	P Tr
D11	5004.0125	1N4004	75 V 1 V/100mA	P Tr
D12				
D13				
D14				
D15				
D16				
D17	5004.0125	1N4004	75 V 1 V/100mA	P Tr

INDI	DATE	NAME	
①			P Philips EL ELECTROLYTIC
②			Tr Transistor CER CERAMIC
③			HPETP Regulated Polyester
④	5.09.80	Heller	
⑤	28.02.80	Heller	
⑥			
⑦			
⑧			
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STUDER SPOOLING MOTOR INTERCON. PRINT 1.180.512-00 PAGE 1 OF 7

INDI POS NO	PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MFR
D18	5004.0125	1N4004	75 V 1V/100mA	P Tr
D19	"	"		
D20	"	"		
D21	"	"		
D22	"	"		
D23	"	"		
D24	"	"		
D25	5004.0125	1N4004	75 V 1V/100mA	P Tr
D26	5004.0507	HR502	200 V 0.91 3A	H
D27	5004.0507	HR502	200 V 0.91 3A	H
D28	5004.0105	1N4004	400 V 10/11A	TI M
D29	"	"		
D30	"	"		
D31	5004.0105	1N4004	400 V 10/11A	TI M
D32,33	5004.0125	1N4004	75 V 1V/100mA	
D34,35	5004.0125	1N4004	75 V 1V/100mA	
IC1	5005.0245	RC 455B	Dual Op.Amp	TI M
IC2	5005.0245	RC 455B	Dual Op.Amp	TI M
AI	5002.0108			
P	5002.0416			
B1				
B2	1.010227.50	RC 2378	NPN	P.S.M
B3	"	"		
B4	"	"		
B5				
B6	1.010227.50	RC 2378	NPN	P.S.M

SPOOLING MOTOR POWER UNIT 1.180.501-00/-81/-82 GR8

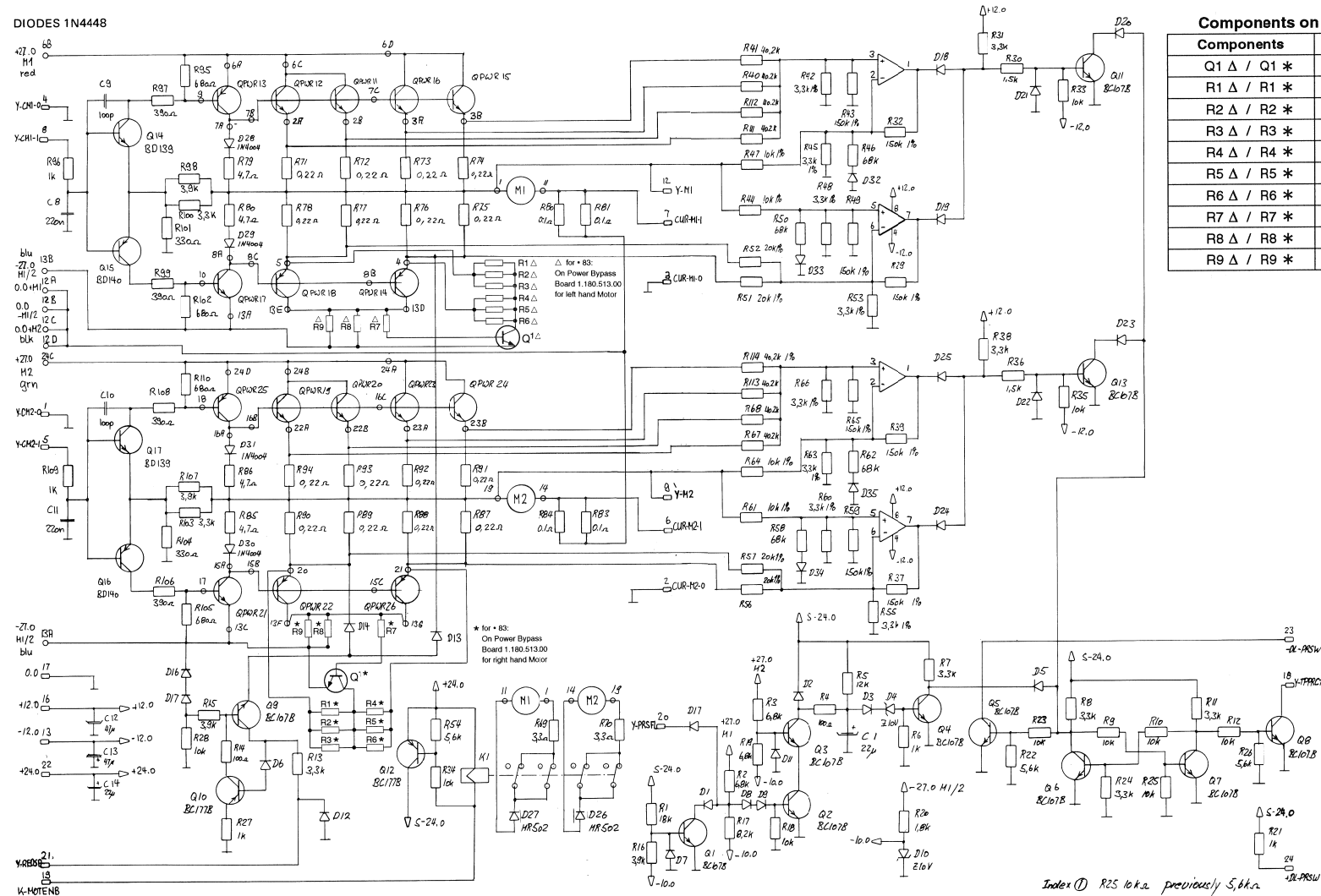
SPOOLING MOTOR INTERCONNECTION PCB
1.180.512 GR8 EL8

SPOOLING MOTOR POWER UNIT 1.180.501.83 GR8

QPWR 11,12,15,16,17 INDEX -00: 2N 5631/MJ 15003 ALL ELEMENTS ARE ON PRINT 1.180.512
19,20,21,23,24 INDEX -81: 2N 5686 EXCEPT TRANSISTORS QPWR-11 ... 26

QPWR 13,14,18,22,25,26 INDEX -00: 2N 6031/MJ 15004
INDEX -81: 2N 5684

DIODES 1N4448

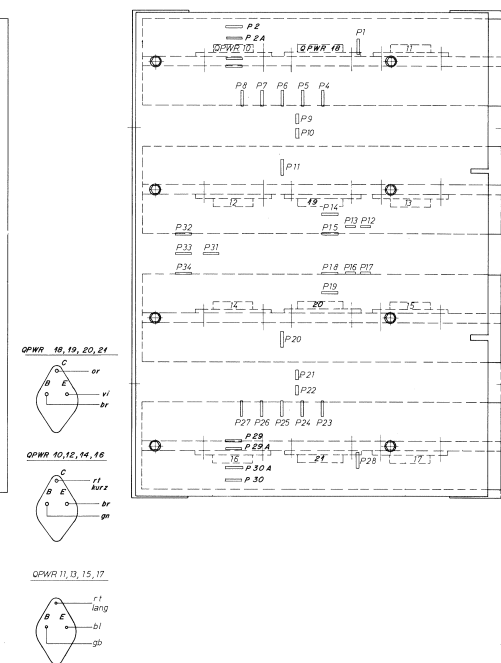
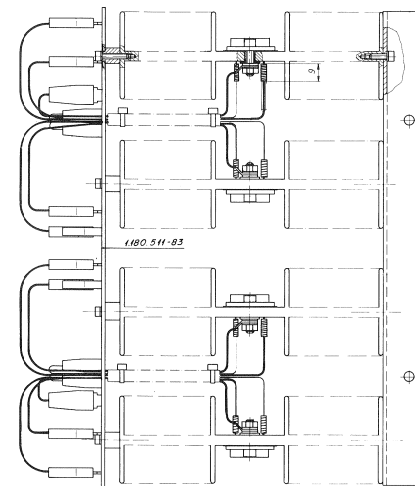
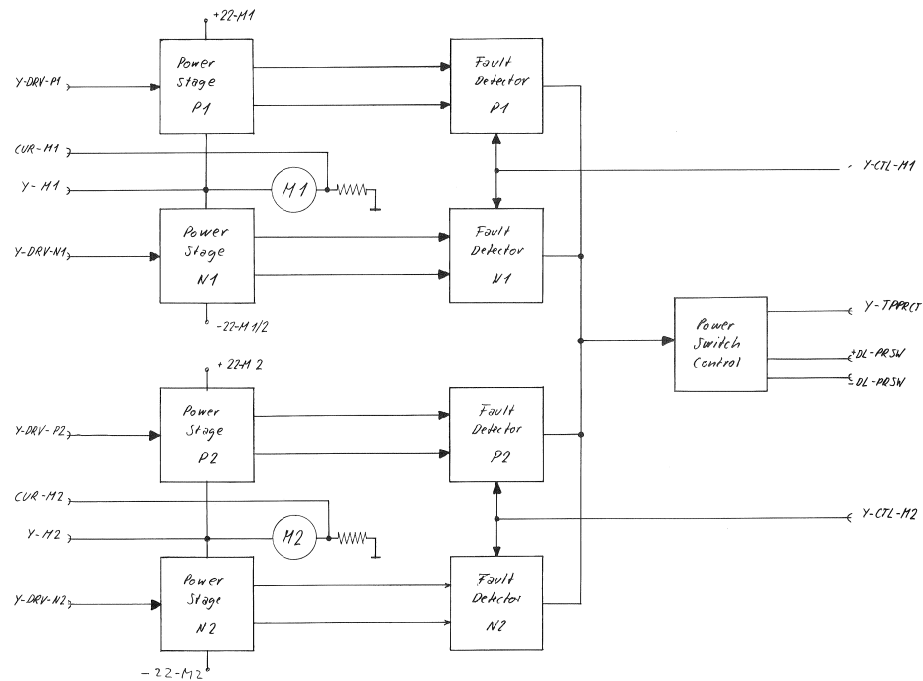


Components on Power Bypass PCB 1.180.513.00

Components	Type / Value	Order number
Q1 Δ / Q1 *	2N 5686	50.03.0507
R1 Δ / R1 *	10 Ω / 4W	57.56.5100
R2 Δ / R2 *	10 Ω / 4W	57.56.5100
R3 Δ / R3 *	10 Ω / 4W	57.56.5100
R4 Δ / R4 *	10 Ω / 4W	57.56.5100
R5 Δ / R5 *	10 Ω / 4W	57.56.5100
R6 Δ / R6 *	10 Ω / 4W	57.56.5100
R7 Δ / R7 *	1 Ω / 4W	57.56.5109
R8 Δ / R8 *	0,47 Ω / 4W	57.56.5478
R9 Δ / R9 *	0,47 Ω / 4W	57.56.5478

SPOOLING MOTOR INTERCONNECTION PCB
1.180.512 GR8 EL8

SPOOLING MOTOR POWER UNIT 1.180.500-83 GR8



VERDRÄHTUNG

Pos.	Farbe	Anschluss Nr.	Pos.	Farbe	Anschluss Nr.	Pos.	Farbe	Anschluss Nr.
QPWR 10	rt. kurz	P7	QPWR 11	rt. lang	P4	QPWR 18	or	C - QPWR 40
	br.	P9		gb	P13		br	B - QPWR 40
	gn	P2		bl	P14		vi	P2A
QPWR 12	rt. kurz	P8	QPWR 13	rt. lang	P5	QPWR 19	or	C - QPWR 42
	br.	P10		gb	P12		br	B - QPWR 42
	gn	P3		bl	P15		vi	P3A
QPWR 14	rt. kurz	P27	QPWR 15	rt. lang	P26	QPWR 20	or	C - QPWR 44
	br.	P21		gb	P16		br	B - QPWR 44
	gn	P29		bl	P18		vi	P29A
QPWR 16	rt. kurz	P25	QPWR 17	rt. lang	P23	QPWR 21	or	C - QPWR 46
	br.	P22		gb	P17		br	B - QPWR 46
	gn	P30		bl	P19		vi	P30A

SPOOLING MOTOR POWER UNIT 1.180.500-83 GR8

INDX POS NO	PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MFR
A 01	1.180.511.00		Sp.Motor Intercon.PC CARD	
Q 10	50.03.0506	2N5684	PNP	
Q 11	50.03.0507	2N5686	NPN	
Q 12	50.03.0506	2N5684	PNP	
Q 13	50.03.0507	2N5686	NPN	
Q 14	50.03.0506	2N5684	PNP	
Q 15	50.03.0507	2N5686	NPN	
Q 16	50.03.0506	2N5684	PNP	
Q 17	50.03.0507	2N5686	NPN	
1 Q 18	50.03.0506	2N5684	PNP	
1 Q 19	50.03.0506	2N5684	PNP	
1 Q 20	50.03.0506	2N5684	PNP	
1 Q 21	50.03.0506	2N5684	PNP	
INDX	DATE	NAME		
④				
⑤				
⑥	30.9.81	-83		
⑦	18.6.80	-81		
⑧	10.9.76	Keller/gv		
STUDER	SPOOLING MOTOR POWER UNIT		1.180.500 - 83	PAGE 1 OF 1

INDX POS NO	PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MFR
R 01	57.56.4221	220	5% 4 W	
R 02	57.56.4221	220		
R 03	57.56.4221	220		
R 04	57.56.4221	220		
R 05	57.99.0186	0.47	10% 9 W	
R 06	57.99.0186	0.47		
R 07	57.99.0186	0.47		
R 08	57.99.0186	0.47		
R 09	57.99.0186	0.47		
R 10	57.99.0186	0.47		
R 11	57.99.0186	0.47		
R 12	57.99.0186	0.47		
R 13	57.99.0186	0.47		
R 14	57.99.0186	0.47		
R 15	57.99.0186	0.47		
R 16	57.99.0186	0.47		
R 17	57.99.0186	0.47		
R 18	57.99.0186	0.47		
R 19	57.99.0186	0.47		
R 20	57.99.0186	0.47		
R 21	57.56.4108	0.1	10% 4 W	
R 22	57.56.4108	0.1		
R 23	57.56.4108	0.1		
R 24	57.56.4108	0.1		
R 31	57.56.4331	330	5% 4 W	
R 32	57.11.4102	1 k	5% .25W CF	
R 33	57.11.4221	220		
R 34	57.11.4102	1 k		
R 35	57.11.4102	1 k		
INDX	DATE	NAME		
④				
⑤	30.9.81	-83		
⑥	18.6.80	-81		
⑦	6.3.79	HA/gv		
⑧	11.12.78	Keller/gv		
STUDER	SPOOLING MOTOR INTERCON.PC CARD		1.180.511.83	PAGE 3 OF 5

INDX POS NO	PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MFR
R 36	57.11.4224	220 k	5% .25W CF	
R 37	57.11.4472	4.7 k		
R 38	57.11.4472	4.7 k		
R 39	57.11.4102	1 k		
R 40	57.11.4223	22 k		
R 41	57.11.4102	1 k		
R 42	57.11.4224	220 k		
R 43	57.11.4332	3.3 k		
R 44	57.11.4332	3.3 k		
R 45	57.56.4102	1 k	5% 4 W	
R 46	57.11.4221	220	5% .25W CF	
R 47	57.11.4333	33 k		
R 48	57.11.4333	33 k		
R 49	57.11.4332	3.3 k		
R 50	57.11.4333	33 k		
R 51	57.11.4223	22 k		
R 52	57.11.4221	220		
R 53	57.11.4472	4.7 k		
R 54	57.11.4472	4.7 k		
R 55	57.11.4224	220 k		
R 56	57.11.4102	1 k		
R 57	57.11.4223	22 k		
R 58	57.11.4102	1 k		
R 59	57.11.4102	1 k		
R 60	57.11.4102	1 k		
R 61	57.11.4224	220 k		
R 62	57.11.4102	1 k		
R 63	57.11.4221	220		
2 R 64	57.11.4222	2.2 k		
2 R 65	57.11.4222	2.2 k		
INDX	DATE	NAME		
④				
⑤	30.9.81	-83		
⑥	18.6.80	-81		
⑦	6.3.79	HA/gv		
⑧	11.12.78	Keller/gv		
STUDER	SPOOLING MOTOR INTERCON.PC CARD		1.180.511.83	PAGE 4 OF 5

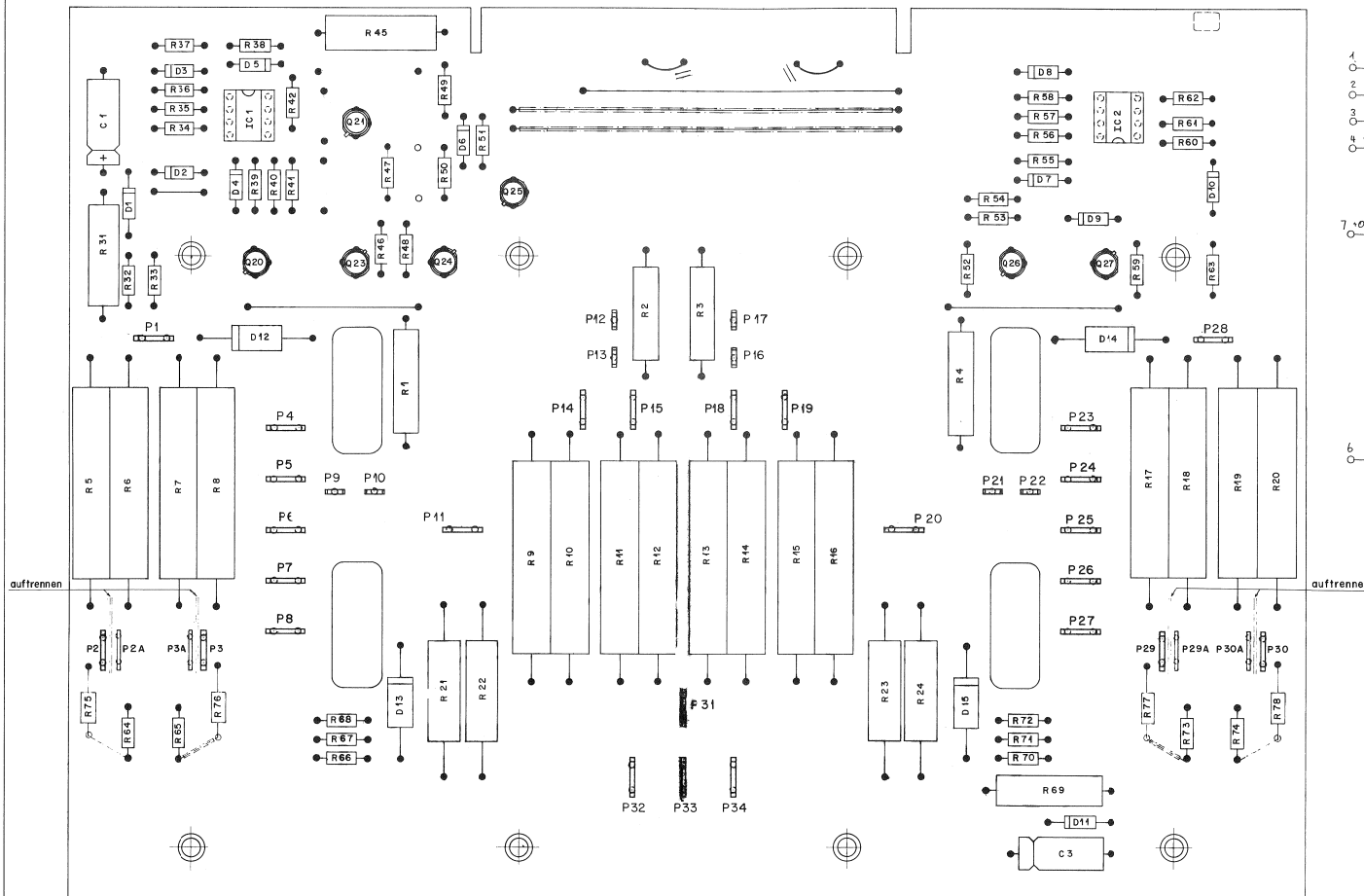
INDX POS NO	PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MFR
P 07	54.02.0335	1-Pol.	6,3 x 0,8	
P 08	54.02.0335	1-Pol.	6,3 x 0,8	
P 09	54.02.0320	1-Pol.	2,8 x 0,8	
P 10	54.02.0320	1-Pol.	2,8 x 0,8	
P 11	54.02.0335	1-Pol.	6,3 x 0,8	
P 12	54.02.0320	1-Pol.	2,8 x 0,8	
P 13	54.02.0320	1-Pol.	2,8 x 0,8	
P 14	54.02.0335	1-Pol.	6,3 x 0,8	
P 15	54.02.0335	1-Pol.	6,3 x 0,8	
P 16	54.02.0320	1-Pol.	2,8 x 0,8	
P 17	54.02.0320	1-Pol.	2,8 x 0,8	
P 18	54.02.0335	1-Pol.	6,3 x 0,8	
P 19	54.02.0335	1-Pol.	6,3 x 0,8	
P 21	54.02.0320	1-Pol.	2,8 x 0,8	
P 22	54.02.0320	1-Pol.	2,8 x 0,8	
P 23	54.02.0335	1-Pol.	6,3 x 0,8	
P 24	54.02.0335	1-Pol.	6,3 x 0,8	
Q 20	50.03.0324	RC177B		
Q 21	50.03.0408	RC107B		
Q 22	50.03.0408	RC107B		
Q 23	50.03.0408	RC107B		
Q 24	50.03.0408	RC107B		
Q 25	50.03.0408	RC107B		
Q 26	50.03.0408	RC107B		
Q 27	50.03.0324	RC177B		
INDX	DATE	NAME		
④				
⑤	30.9.81	-83		
⑥	18.6.80	-81		
⑦	6.3.79	HA/gv		
⑧	11.12.78	Keller/gv		
STUDER	SPOOLING MOTOR INTERCON.PC CARD		1.180.511.83	PAGE 2 OF 5

INDX POS NO	PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MFR
R 66	57.11.4102	1 k	5% .25W CF	
R 67	57.11.4102	1 k		
R 68	57.11.4102	1 k		
R 69	57.56.4331	330	5% 4 W	
R 70	57.11.4102	1 k	5% .25W CF	
R 71	57.11.4102	1 k		
R 72	57.11.4102	1 k		
2 R 73	57.11.4222	2.2 k		
2 R 74	57.11.4222	2.2 k		
2 R 75	57.11.4222	2.2 k		
2 R 76	57.11.4222	2.2 k		
2 R 77	57.11.4222	2.2 k		
2 R 78	57.11.4222	2.2 k		
INDX	DATE	NAME		
④				
⑤	30.9.81	-83		
⑥	18.6.80	-81		
⑦	6.3.79	HA/gv		
⑧	11.12.78	Keller/gv		
STUDER	SPOOLING MOTOR INTERCON.PC CARD		1.180.511.83	PAGE 5 OF 5

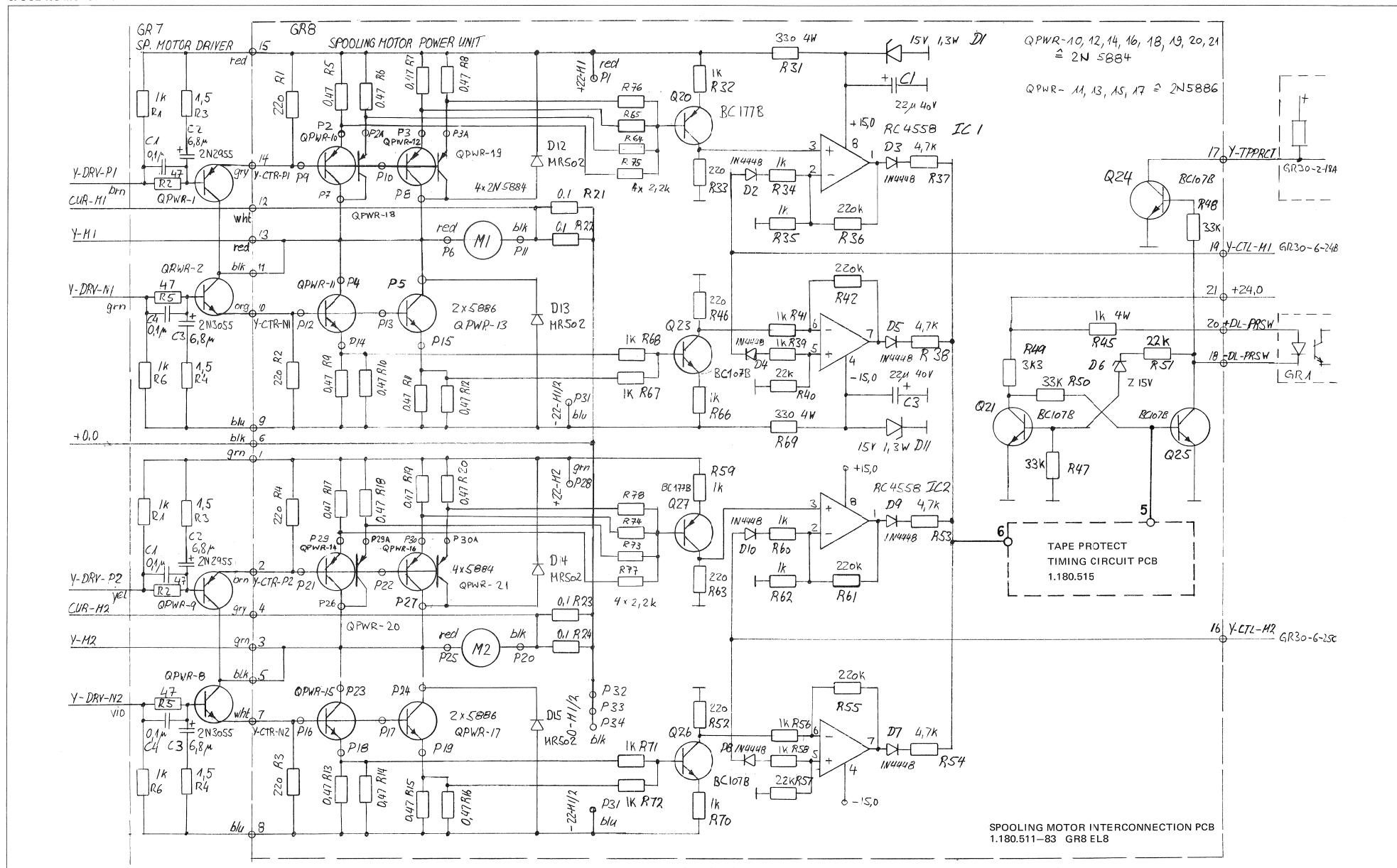
SPOOLING MOTOR POWER UNIT 1.180.500-83 GR8

SPOOLING MOTOR INTERCONNECTION PCB
1.180.511-83 GR8 EL8

Leiterbahnen unterbrochen

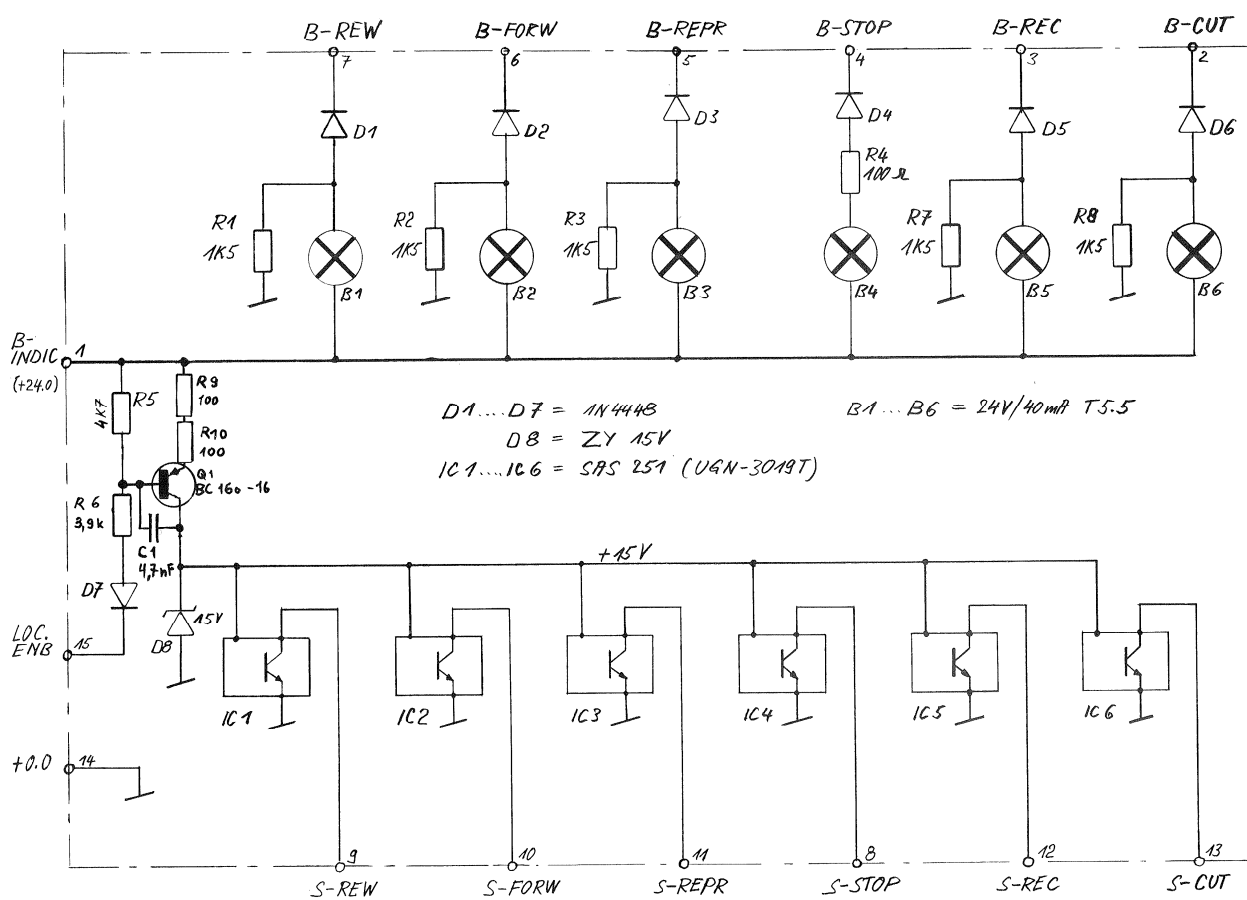


SPOOLING MOTOR POWER UNIT 1.180.500-83 GR8



COMMAND SWITCHES UNIT LOCAL 1.180.255-81 GR18

COMMAND SWITCHES PCB 1.180.257-81 GR18 EL18



VERSION 1.180.257-00 : C1, R9, R10 ARE MISSING

COMMAND SWITCHES UNIT LOCAL 1.180.255-81 GR18

IND	POS NO	PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MFR
	B 01	51.02.0145	24V,	0,04A	T 5,5
	B 02	51.02.0145	24V,		
	B 03	51.02.0145	24V,		
	B 04	51.02.0145	24V,		
	B 05	51.02.0145	24V,		
	B 06	51.02.0145	24V,		
1	C 01	59.06.0472	63V-		
	D 01	50.04.0125	1N4448	75V 100mA	SI
	D 02	50.04.0125	1N4448		
	D 03	50.04.0125	1N4448		
	D 04	50.04.0125	1N4448		
	D 05	50.04.0125	1N4448		
	D 06	50.04.0125	1N4448		
	D 07	50.04.0125	1N4448		
	D 08	50.04.1512	ZY 15V	5% 1,3W	
	IC 1	50.99.0127	SAS 251	HALL-EFFECT-SWITCH UGN-3019T	SP, S
	IC 2	50.99.0127	SAS 251		
	IC 3	50.99.0127	SAS 251		
	IC 4	50.99.0127	SAS 251		
	IC 5	50.99.0127	SAS 251		
	IC 6	50.99.0127	SAS 251		
	Q 01	50.03.0315	BC 160-16		
	R 01	57.11.4152	1,5 k	2% .25W	MF
	R 02	57.11.4152	1,5 k		

IND

DATE

NAME

SP = Sprague
S = Siemens

④

③

②

①

①

7.12.82

vgl/

81

26.4.78

Schn/gv

STUDER

Command switches, Local Print

1.180.257-81

PAGE 1 OF 2

IND	POS NO	PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MFR
	R 03	57-11.4152	1,5 k	2% .25W	MF
	R 04	57.02.5101	100	10%	CMA
	R 05	57.11.4472	4,7 k	2%	MF
	R 06	57.11.4392	3,9 k		
	R 07	57.11.4152	1,5 k		
1	R 08	57.11.4152	1,5 k		
1	R 09	57.11.4101	100		
1	R 10	57.11.4101	100		

IND

DATE

NAME

SP = Sprague
S = Siemens

④

③

②

①

①

7.12.02

vgl/

81

26.4.78

Schn/gv

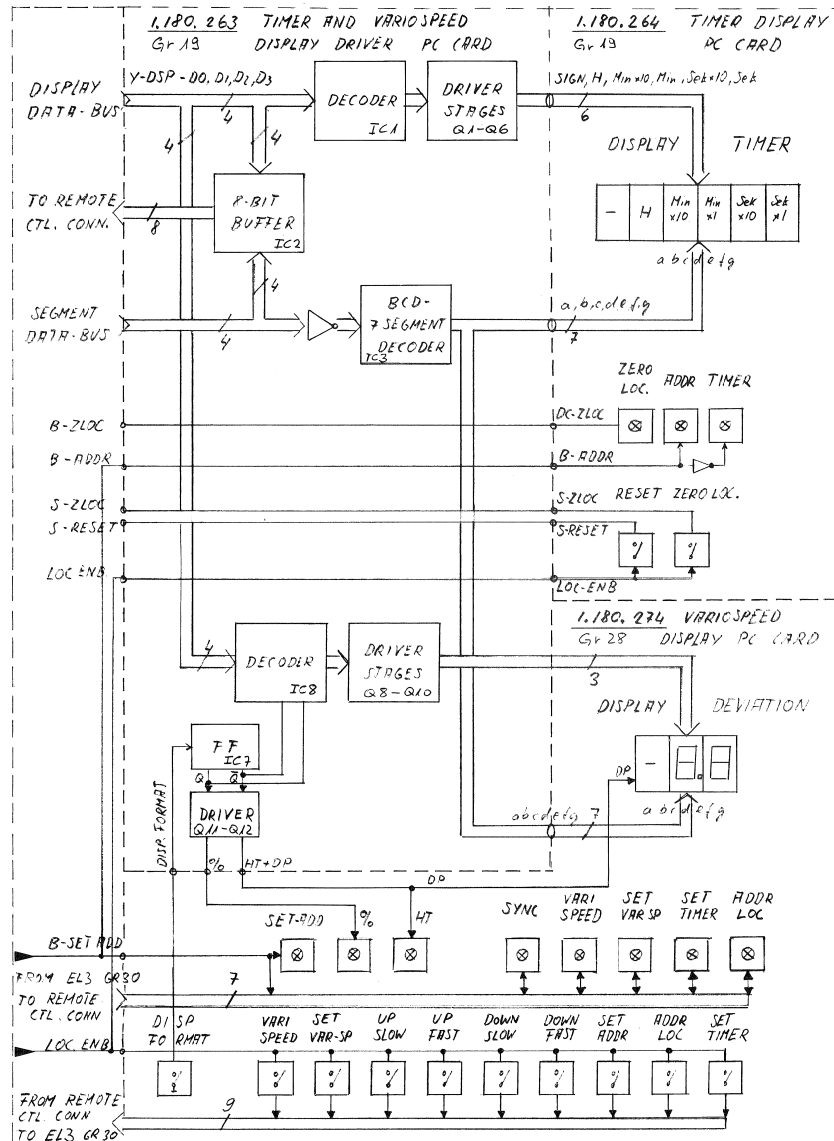
STUDER

Command switches, Local Print

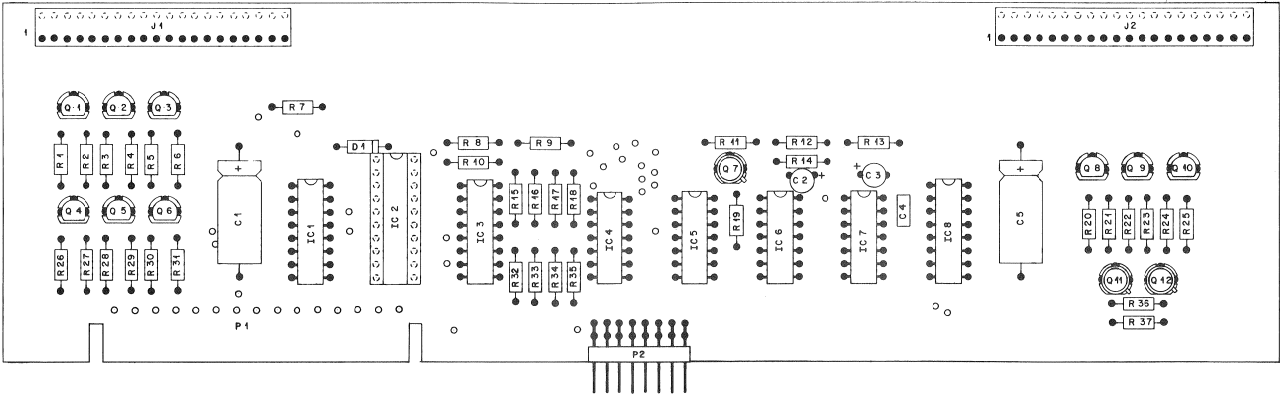
1.180.257-81

PAGE 2 OF 2

TAPE TIMER AND VARIOSPEED CONTROL UNIT 1.180.260 GR19/28



TIMER AND VARIOSPEED DISPLAY DRIVER PCB 1.180.263 GR19 EL2



IND	POS NO	PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MFR
C 01	59.25.1471	470 U	6V	EL	
C 02	59.36.4109	1 U	25V	TA	
C 03	59.36.4109	1 U			
C 04	59.99.0205	68 N	63V	CER	
C 05	59.25.1471	470 U			
D 01	50.04.0125	184448			
IC 1	50.06.0156	74LS156	Decoder/Demultiplexer		TI
IC 2	50.06.0244	74LS244	Line Driver		
IC 3	50.06.0247	74LS247	Decoder		
IC 4	50.06.0014	74LS14	Hex Inverter		
IC 5	50.06.0027	74LS27	3-Input Nor		
IC 6	50.06.0000	74LS00	2-Input Nand		
IC 7	50.06.0074	74LS74	Dual D-Flip-Flop		
IC 8	50.06.0156	74LS156	Decoder/Demultiplexer		
J 01	54.01.0237	20-Pole		CIS	
J 02	54.01.0237	20-Pole		CIS	
P 01	54.01.0690	2 x 8	Plug		
Q 01	50.03.0351	284403		NPN	
Q 02	50.03.0351	284403			
Q 03	50.03.0351	284403			
Q 04	50.03.0351	284403			
Q 05	50.03.0351	284403			

IND	DATE	NAME
④		TI = Texas Instr.
③		
②		
①		
①	18.04.78	E.Schönl/gv
STUDER	Timer and Variospeed displ.driver	1.180.263

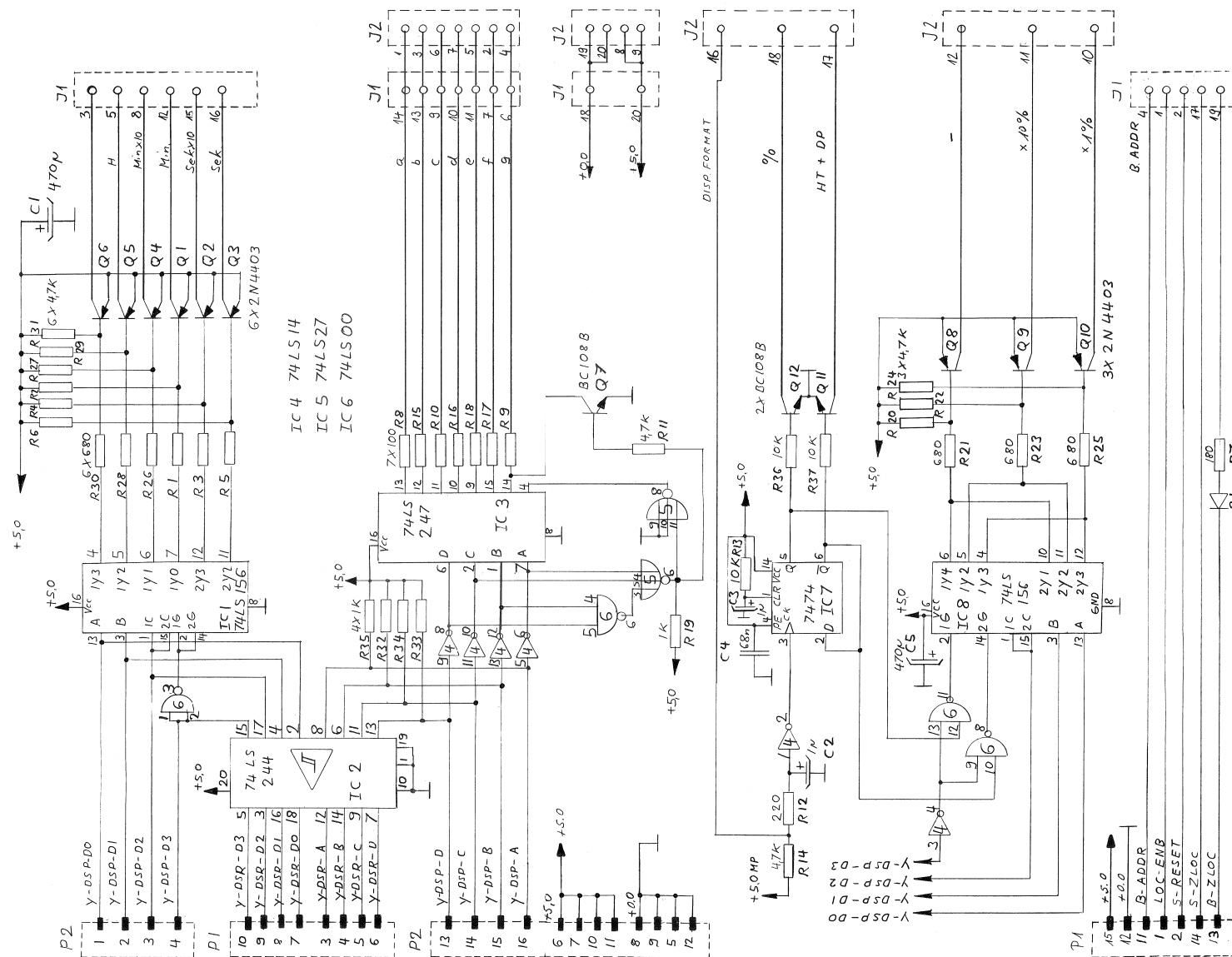
IND	POS NO	PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MFR
Q 06	50.03.0351	284403		NPN	
Q 07	50.03.0409	BC10BB		NPN	
Q 08	50.03.0351	284403		NPN	
Q 09	50.03.0351	284403			
Q 10	50.03.0351	284403			
Q 11	50.03.0409	BC10BB		NPN	
Q 12	50.03.0409	BC10BB			
R 01	57.11.4681	680	5%	.25W CF	
R 02	57.11.4472	4,7 k			
R 03	57.11.4681	680			
R 04	57.11.4472	4,7 k			
R 05	57.11.4681	680			
R 06	57.11.4472	4,7 k			
R 07	57.11.4181	180			
R 08	57.11.4101	100			
R 09	57.11.4101	100			
R 10	57.11.4101	100			
R 11	57.11.4472	4,7 k			
R 12	57.11.4221	220			
R 13	57.11.4103	10 k			
R 14	57.11.4472	4,7 k			
R 15	57.11.4101	100			
R 16	57.11.4101	100			
R 17	57.11.4101	100			
R 18	57.11.4103	100			
R 19	57.11.4102	1 k			
R 20	57.11.4472	4,7 k			

IND	DATE	NAME
④		
③		
②		
①		
①	18.04.78	E.Schönl/gv
STUDER	Timer and Variospeed displ.driver	1.180.263

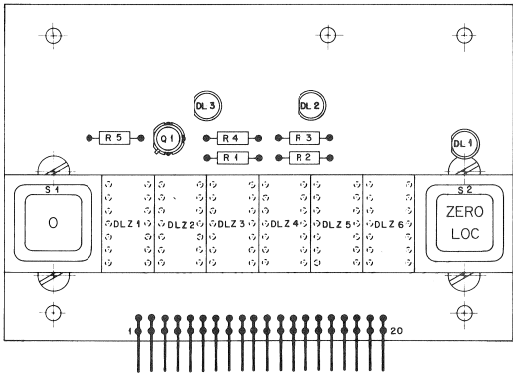
IND	POS NO	PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MFR
R 21	57.11.4681	680	5%	.25W CF	
R 22	57.11.4472	4,7 k			
R 23	57.11.4681	680			
R 24	57.11.4472	4,7 k			
R 25	57.11.4681	680			
R 26	57.11.4681	680			
R 27	57.11.4472	4,7 k			
R 28	57.11.4681	680			
R 29	57.11.4472	4,7 k			
R 30	57.11.4681	680			
R 31	57.11.4472	4,7 k			
R 32	57.11.4471	470			
R 33	57.11.4471	470			
R 34	57.11.4471	470			
R 35	57.11.4471	470			
R 36	57.11.4103	10 k			
R 37	57.11.4103	10 k			

IND	DATE	NAME
④		
③		
②		
①		
①	18.04.78	E.Schönl/gv
STUDER	Timer and Variospeed displ.driver	1.180.263

18.04.78



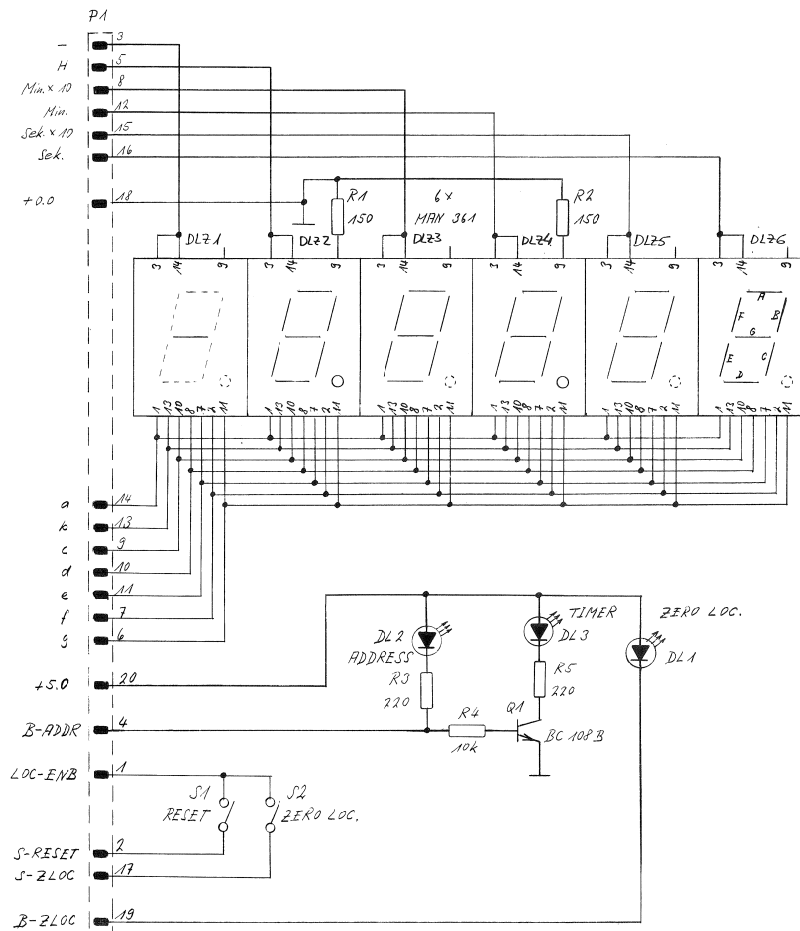
TIMER DISPLAY PCB 1.180.264 GR19 EL1



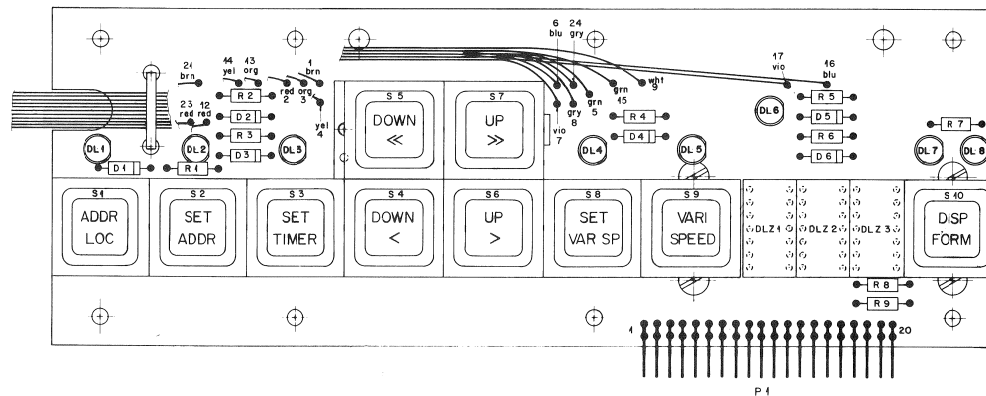
IND. POS. NO.	PART NO.	VALUE	SPECIFICATIONS/EQUIVALENT	MFR.
DL 1	50.04.2111	MV5753	LED	
DL 2	50.04.2111	MV5753		
DL 3	50.04.2111	MV5753		
DLZ 1	73.01.0120	MAN 361	7-Segment Disp. OR	MS
DLZ 2	73.01.0120	MAN 361		
DLZ 3	73.01.0120	MAN 361		
DLZ 4	73.01.0120	MAN 361		
DLZ 5	73.01.0120	MAN 361		
DLZ 6	73.01.0120	MAN 361		
P 01	54.01.0261	20-Pin	CIS	AMP
Q 01	50.03.0409	BC10BB	Small Signal NPN	any
R 01	57.11.4151	150	5% .25W CF	
R 02	57.11.4151	150		
R 03	57.11.4221	220		
R 04	57.11.4103	10 k		
R 05	57.11.4221	220		
S 1	1.011.201.01	1	CASE	
	1.011.201.02	1	SPRING (SWITCH)	
	1.011.201.03	1	INSULATING LAYER	
S 2	1.011.201.01	1	CASE	
	1.011.201.02	1	SPRING (SWITCH)	
	1.011.201.03	1	INSULATING LAYER	

IND.	DATE	NAME		
⑥			MS = Monsanto	
⑦				
⑧				
⑨				
⑩	24.4.78	Six/L/gv		
STUDER		TIMER DISPLAY PC CARD	1.180.264	PAGE 1 OF 1

TIMER DISPLAY PCB 1.180.264 GR19 EL1



Ader- farbe	Länge	Signal- Name	Kupplungsgehäuse Punkt	Print Punkt
br	140	S-ADDLOC	1	1
rt	140	S-SETADD	2	2
or	140	S-SETTMR	3	3
gb	140	S-DWNSLW	4	4
gn	210	S-DWNFST	5	5
bl	190	S-UPSLW	6	6
vi	190	S-UPFST	7	7
gr	190	S-SETVSP	8	8
ws	200	S-VARISP	9	9
rt	120	B-ADDLOC	12	12
or	140	B-SETADD	13	13
gb	140	B-SETTMR	14	14
gn	210	B-SETVSP	15	15
bl	250	B-VARISP	16	16
vi	240	B-SYNC	17	17
bn	140	B-ADDR	21	21
rt	140	+5,0	23	23
gr	210	LOC.ENB	24	24



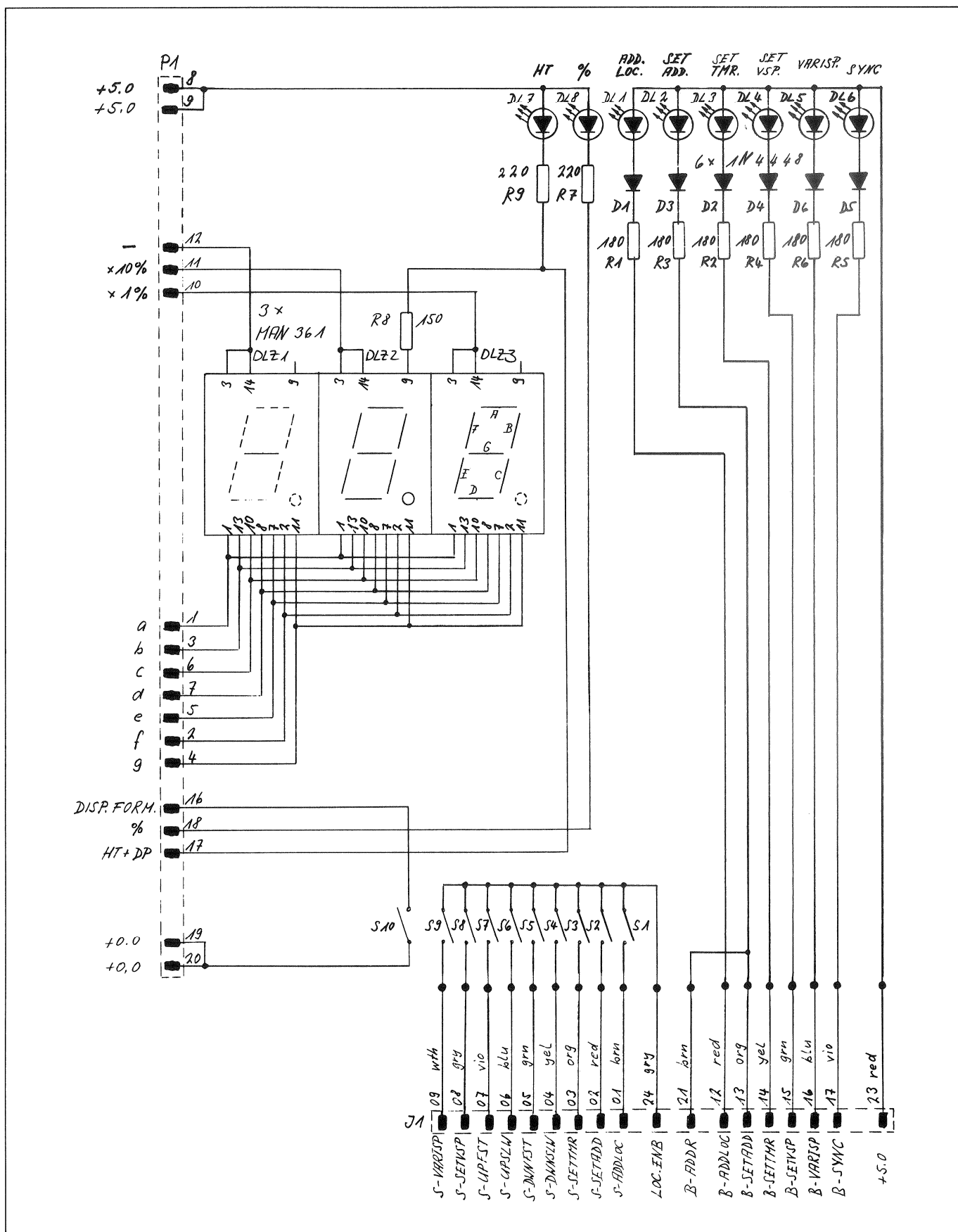
INC POS NO	PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MP
D 01	50.04.0125	134448		STD
D 02	50.04.0125	134448		
D 03	50.04.0125	134448		
D 04	50.04.0125	134448		
D 05	50.04.0125	134448		
D 06	50.04.0125	134448		
DL 1	50.04.2111	MSV753	LEB red	MS
DL 2	50.04.2111	MSV753		
DL 3	50.04.2111	MSV753		
DL 4	50.04.2111	MSV753		
DL 5	50.04.2111	MSV753		
DL 6	50.04.2111	MSV753		
DL 7	50.04.2111	MSV753		
DL 8	50.04.2111	MSV753		
DLZ 1	73.01.012c	MAN 361	7-segment Disp. OR	MS
DLZ 2	73.01.012c	MAN 361		
DLZ 3	73.01.012c	MAN 361		
J 01	54.02.0416	24-Pole	Plug-Socket	M
R 01	57.41.4181	180	5% .25W CF	
R 02	57.41.4181	180		
R 03	57.41.4181	180		
R 04	57.41.4181	180		
R 05	57.41.4181	180		
R 06	57.41.4181	180		
R 07	57.41.4221	220		

IND	DATE	NAME	MS = Monsanto M = Molex
④			
③			
②			
①			
☐ 24.4.78	E. Schöni/gv		
STUDER	Variable Speed Control	1.180.274	PAGE 1 OF 13.048

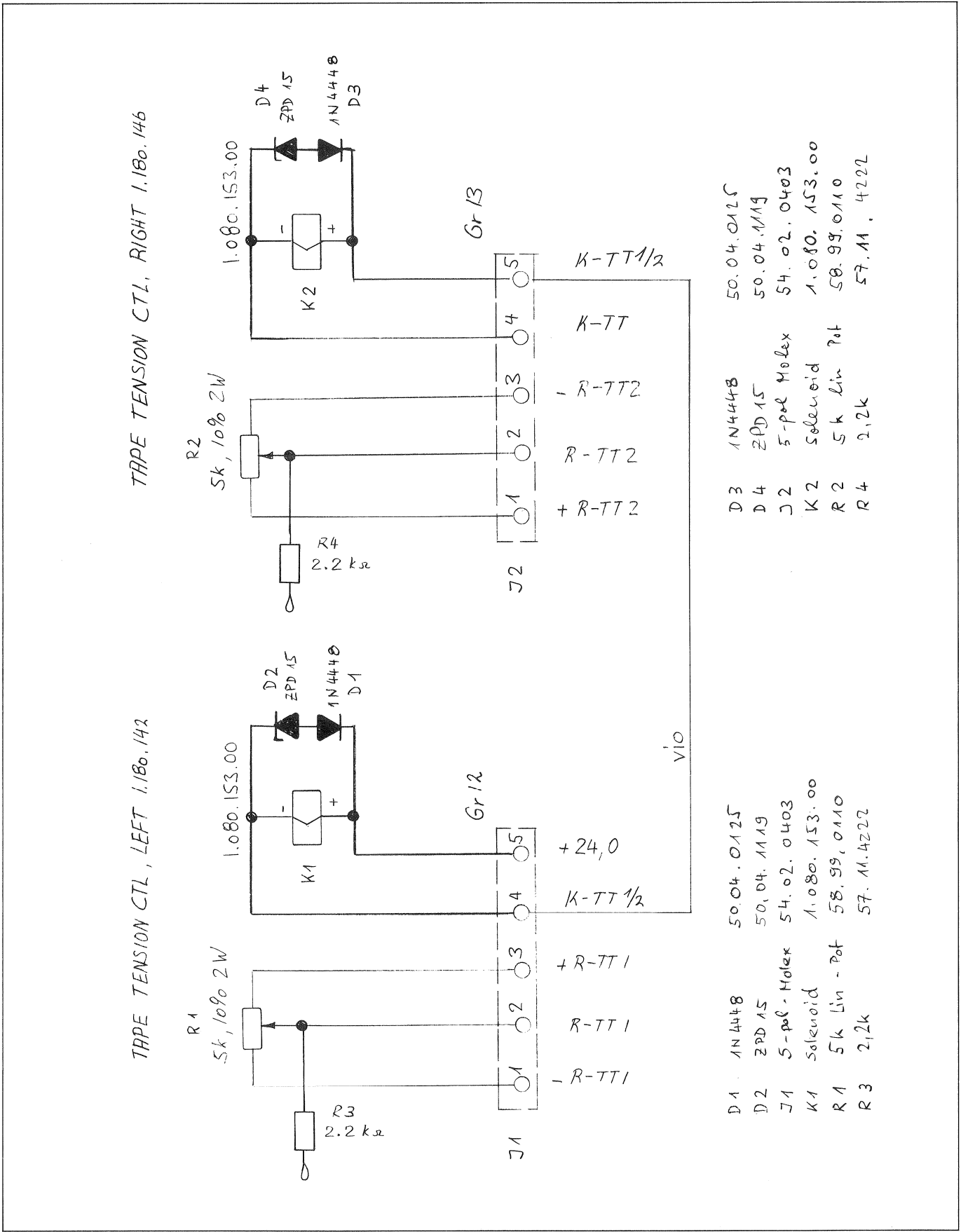
[illegible]

IND	DATE	NAME		
⑤				
⑥				
⑦				
⑧				
○	24.4.78	E. Schöni/gv		
STUDER			Variable Speed Control	PAGE 2 OF 2

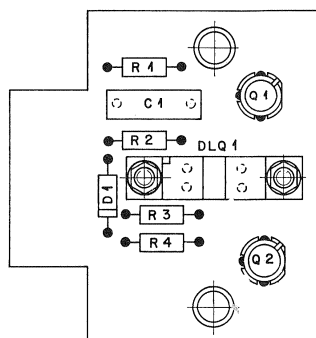
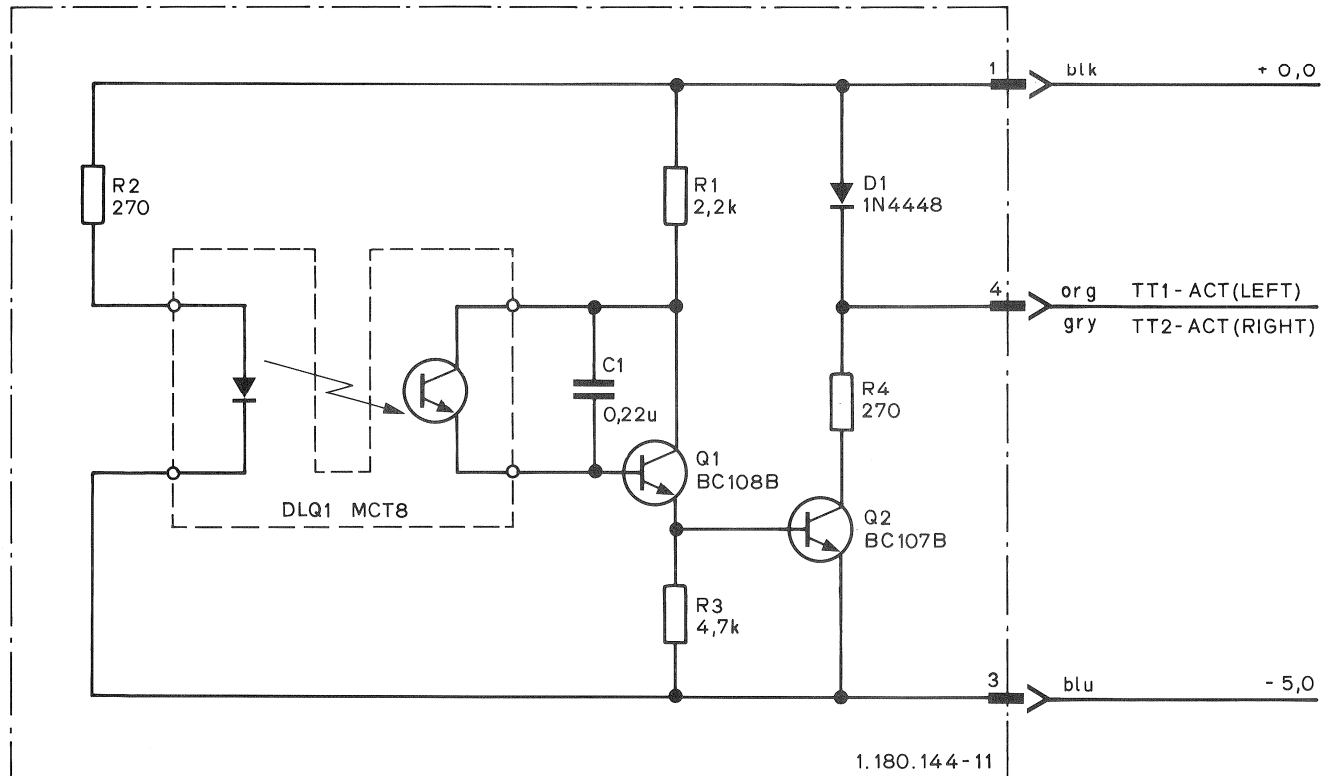
VARIABLE SPEED CONTROL PCB 1.180.274 GR28 EL1



TAPE TENSION CONTROL LEFT/RIGHT 1.180,142/146 GR12/13



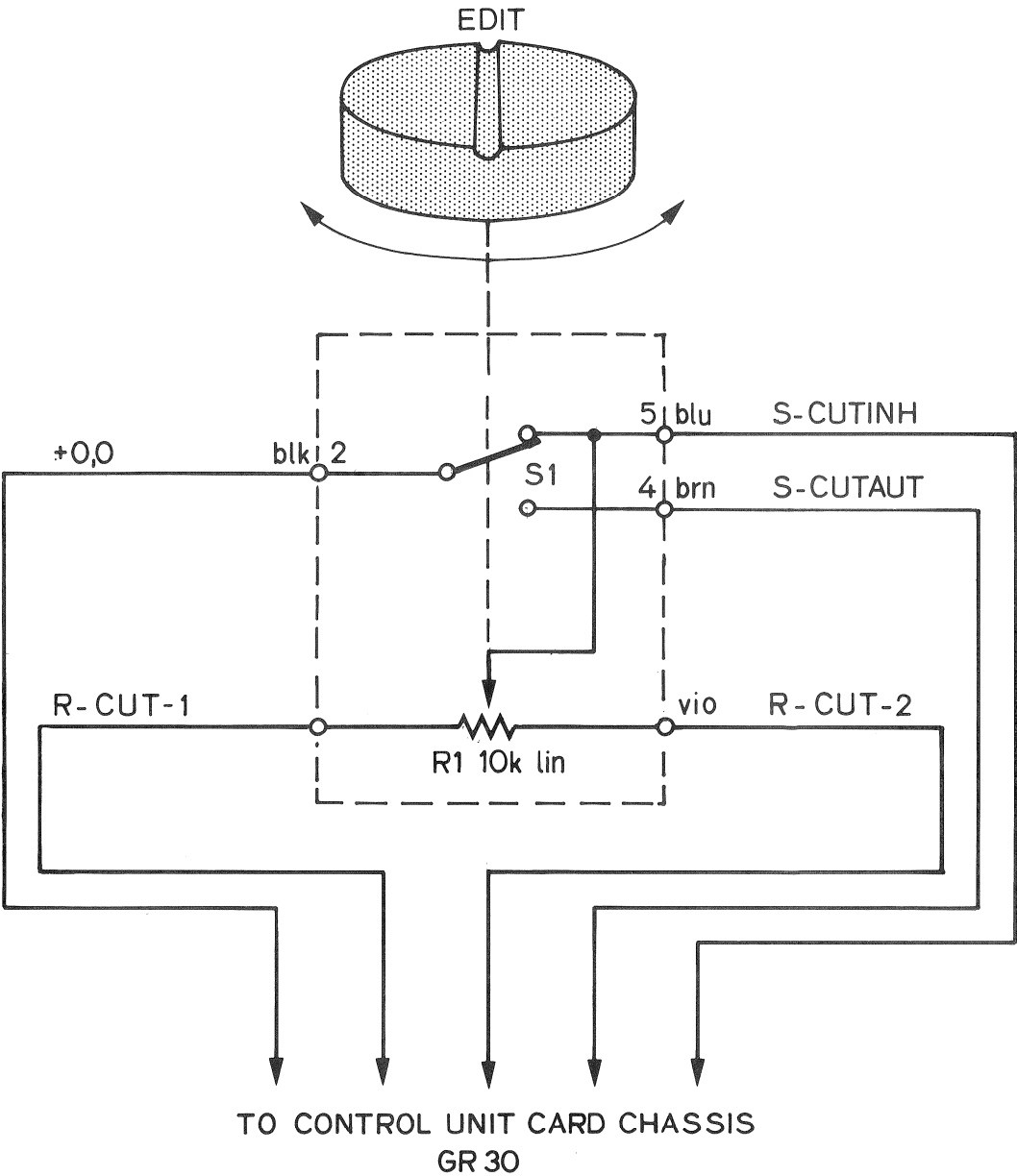
TAPE END SENSOR PCB LEFT/RIGHT	1.180.144	GR14/15
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[illegible]

IND	DATE	NAME	
④			
③	4.1.79	Ha/	
②	6.10.78	Ha/	
①	8.2.77	vo/	
○	29.6.76	Hil/gv	

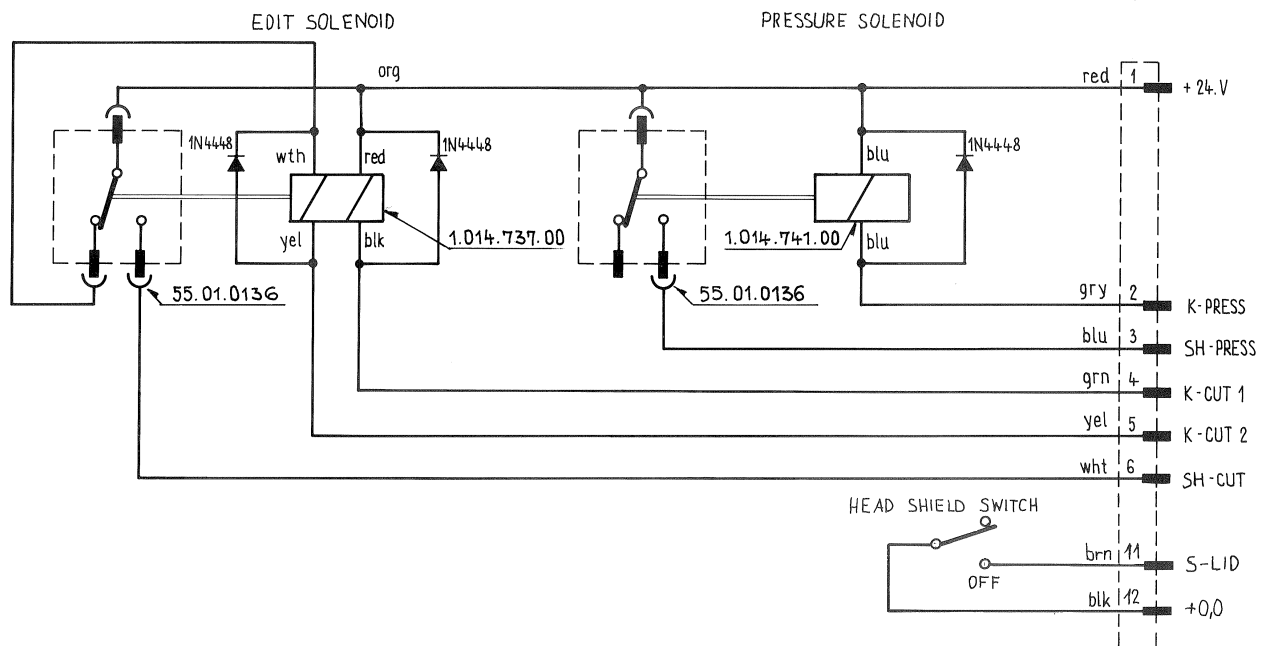
STUDER	TAPE END SENSOR	1.180.144	PAGE 1 OF 1
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CUTTER CONTROL UNIT 1.180.291 GR20

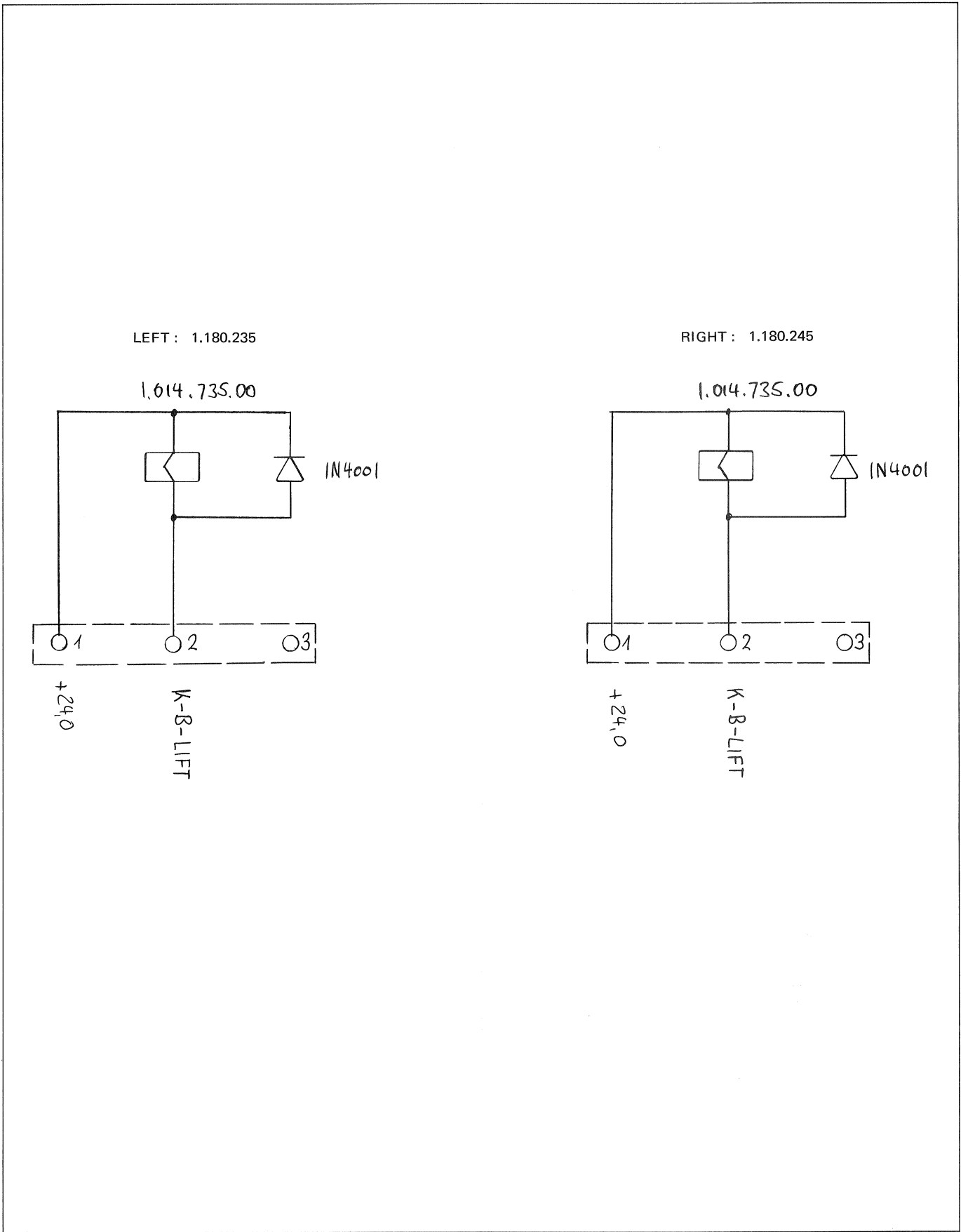


S1 = 55.01.0124
R1 = 54.02.0403

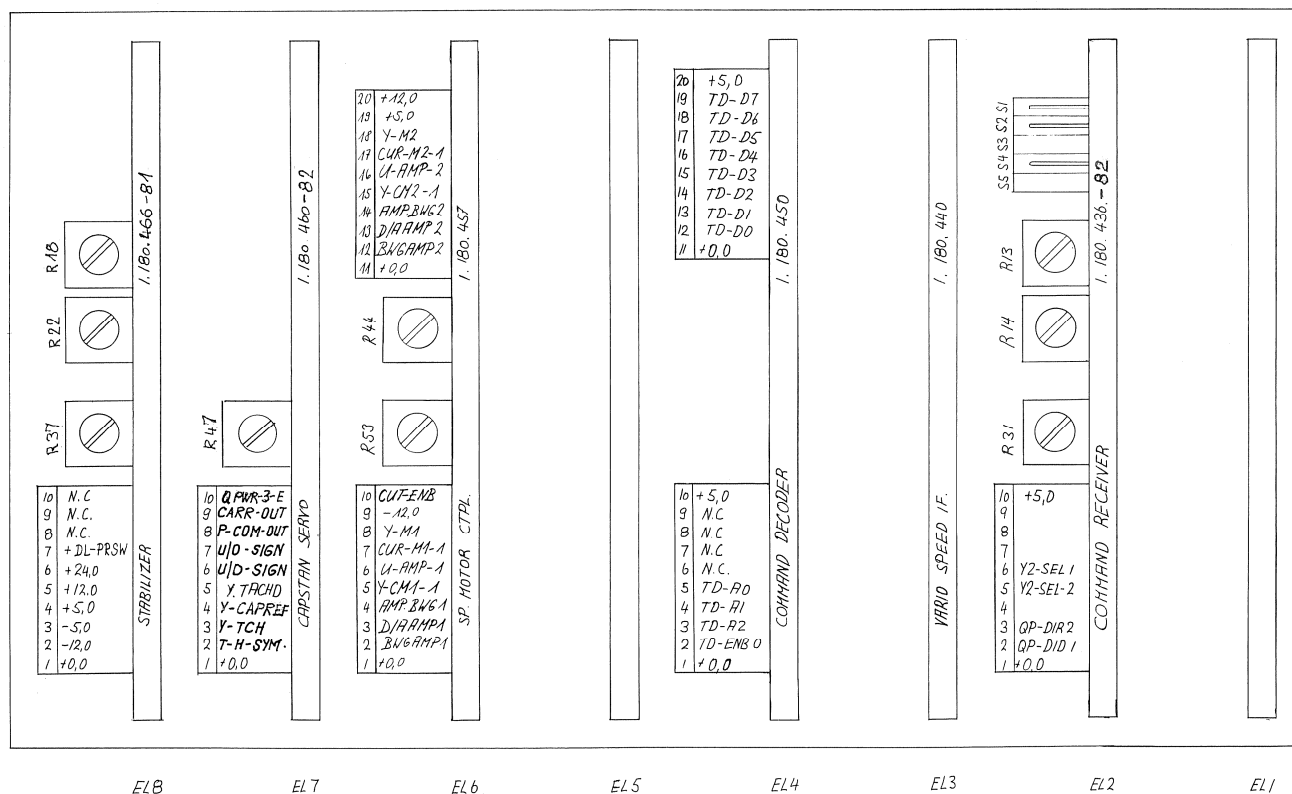
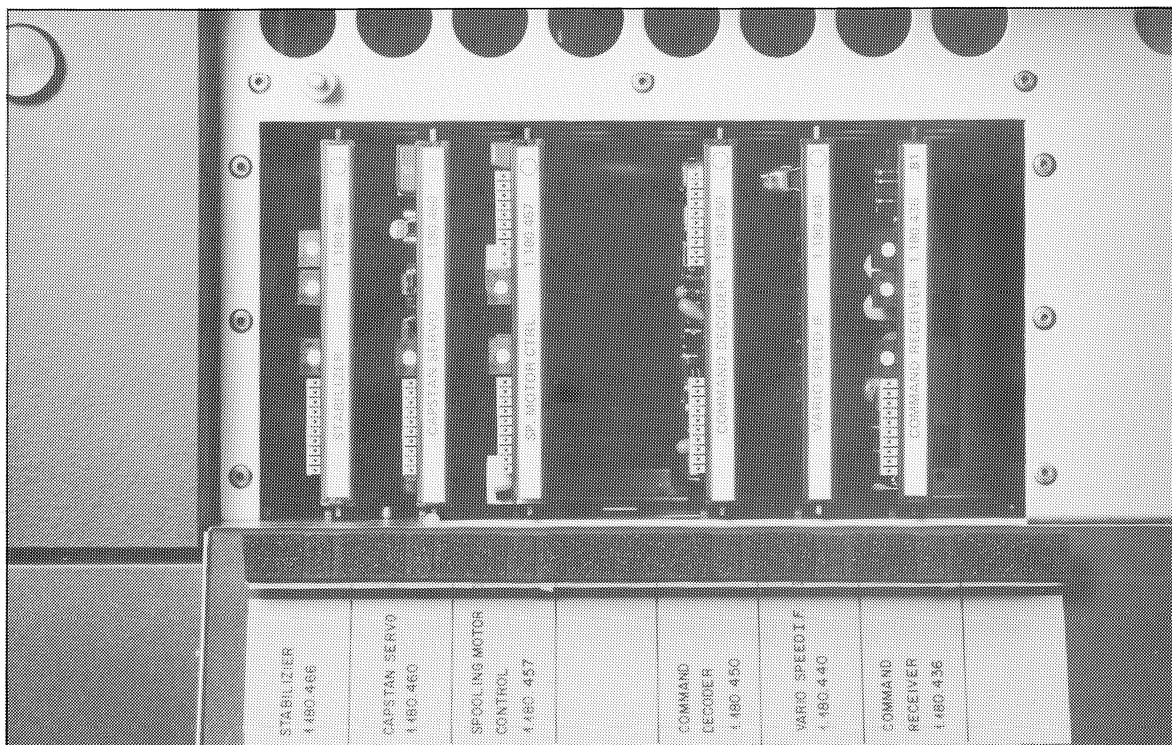
PRESSURE ROLLER UNIT 1.180.120 GR21



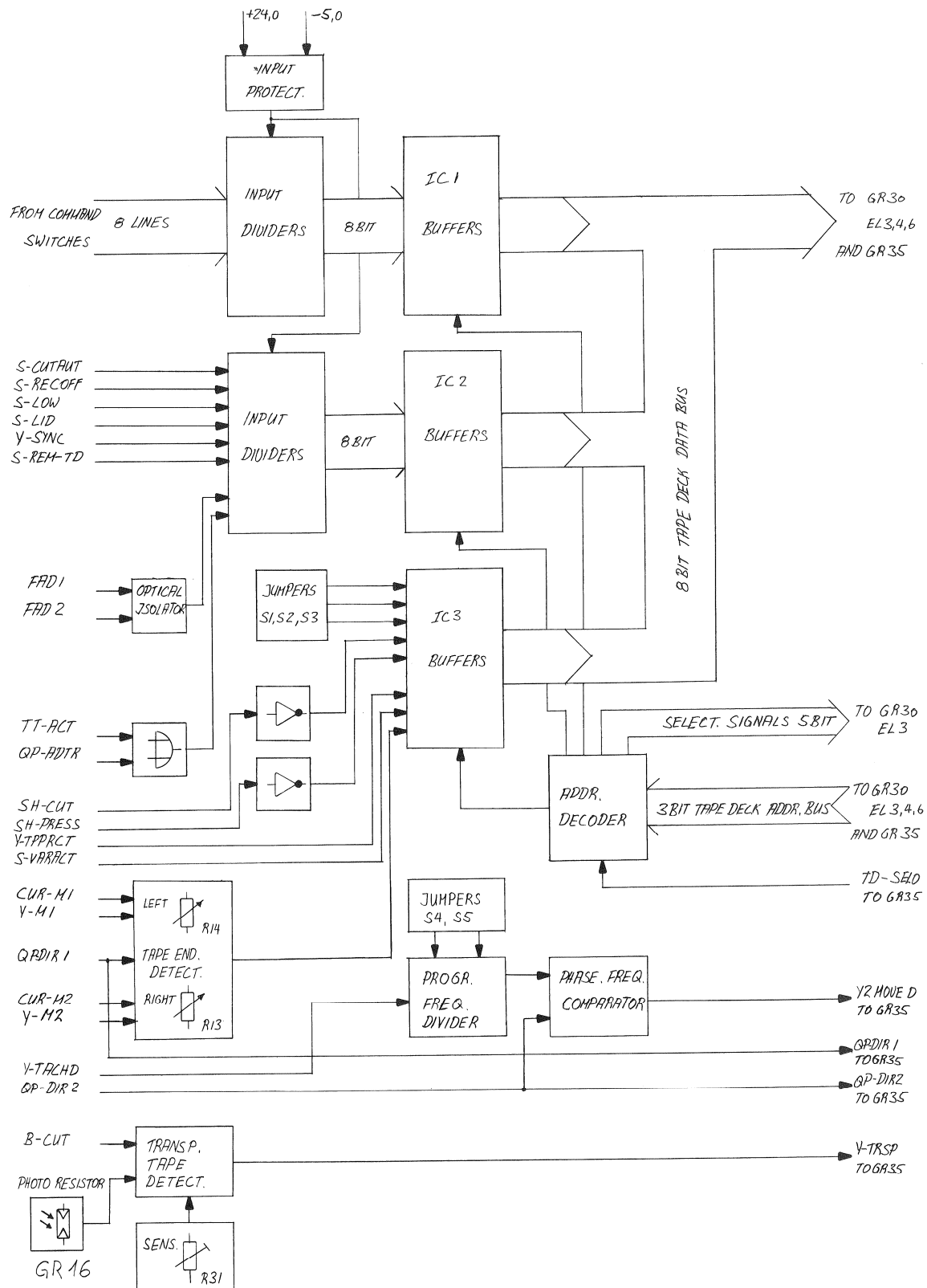
BRAKE LIFT SOLENOIDS 1.180.235/245 GR22/23



TAPE DECK CONTROL UNIT / CARD CHASSIS 1.180.402 GR30



COMMAND RECEIVER PCB 1.180.436-81/-82 GR30 EL2

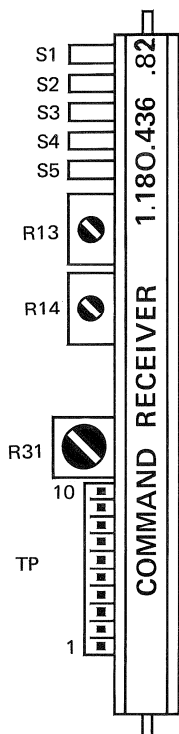
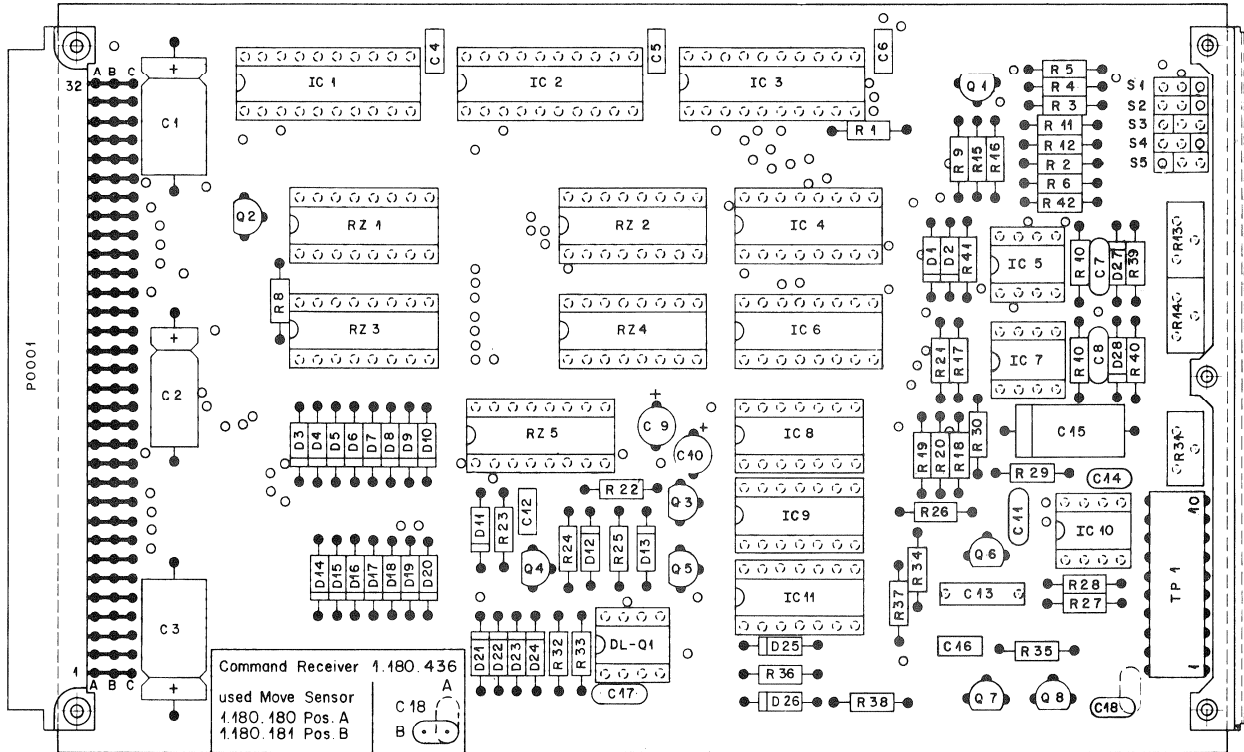


IND	POS NO	PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MFR
	C 01	59.25.3101	100µF	16V EL	
	C 02	59.25.5220	22µF	40V EL	
	C 03	59.25.3101	100µF	16V EL	
	C 4-6	59.99.0205	68nF	63V CER	
6/23	C 7-8	59.26.5159	1,5µF	25V SAL	
	C9-10	59.36.4479	4,7µF	25V TA	
6,235	C 11	59.36.5229	2,2 µF	25V SAL	
	C 12	59.99.0205	68nF	63V CER	
	C 13	59.31.4472	4,7nF	160V PETP	
	C 14	59.32.3103	10nF	40V= CER	
	C 15	59.12.7752	7,5nF	63V PS	
	C 16	59.99.0205	68nF	63V CER	
3	C 17	59.26.5229	2,2µF	25V SAL	
	C 18	59.32.3103	10nF	40V= CER	
2	D1-28	50.04.0125	1N4448		any
	DL-01	50.99.0111	1LD74	MCT-6	L, Ms
	IC1-3	50.06.0240	74LS240	Octal-buffer driver 3-State	M, F
	IC 04	50.06.0138	74LS138	3 to 8 Line decoder	TI, AM
	IC 05	50.05.0245	RC4558P	Dual Op.-Amp. RC4558DN	TI, Ra
	IC 06	50.06.0163	74LS163	Synchronous 4-Bit Counter	TI, SI
	IC 07	50.05.0245	RC4558R	Dual Op.-Amp. RC4558DN	TI, Ra
	IC 08	50.06.0014	74LS14	Hex. Inv. Schmitttrigger	TI, SI
	IC 09	50.05.0149	MC 4044	Phase-Freq. Detector	M
	IC 10	50.05.0158	NE 555 N	Timer LM 555 CN	SI, N
	IC 11	50.06.0000	74LS00	Quad 2-input NAND	TI, SI
⑥	12.7.82	Hä	82		
⑤	26.3.82	Hä			
④	24.6.81	Hä			
③	3.10.80	gv/Vo			
②	9.9.80	Keller 81			
①	10.5.79	Siki			
○	15.12.78	Keller/gv			
STUDER			COMMAND RECEIVER PC CARD	1.180.436-82	PAGE 1 OF 3

IND	POS NO	PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MFR
	P 01	54.01.0358	3 x 32	P Conn.	
	P2-16	54.01.0020		Plug	
	Q 01	50.03.0408	BC107B	NPN Smallsignal	any
	Q 02	50.03.0324	BC177B	PNP Smallsignal	any
	Q 3-6	50.03.0409	BC108B	NPN Smallsignal	any
	Q 07	50.03.0408	BC107B		
	Q 08	50.03.0409	BC108B		
	R 1-3	57.11.4472	4,7 k	5% .25W CF	
	R 04	57.11.4122	1,2 k		
	R 05	57.11.4331	330		
1	R 07	57.11.4123	12 k		
	RO6,8	57.11.4472	4,7 k		
	R 09	57.11.4103	10 k		
1	R 10	57.11.4123	12 k		
	R 11	57.39.3012	30,1 k	1% 100ppm/°C	
6	R 12	57.11.3134	130 k	1% .25W CF	
	R13-14	58.01.7502	5 k	Lin. .5 W PMG	
	R 15	57.39.6981	6,98 k	1% 100ppm/°C	
6	R 16	57.11.4471	470	2% .25W CF	
6	R 17	57.11.3134	130 k	1%	
	R 18	57.39.3012	30,1 k		
	R 19	57.39.6981	6,98 k		
6	R 20	57.11.4471	470	2%	
	R 21	57.11.4103	10 k	5% .25W CF	
	R 22	57.11.4472	4,7 k		
	R 23	57.11.4333	33 k		
⑤	26.3.82	Hä			
④	24.6.81	Hä			
③	3.10.80	gv/Vo			
②	9.9.80	Keller 81			
①	10.5.79	Siki			
○	15.12.78	Keller/gv			
STUDER			COMMAND RECEIVER PC CARD	1.180.436-82	PAGE 2 OF 3

IND	POS NO	PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MFR
	R24-26	57.11.4103	10 k	5% .25W CF	
	R 27	57.11.4102	1 k		
	R 28	57.11.4103	10 k		
1	R 29	57.39.2002	20 k	1% MF	
2	R 30	57.11.4273	27 k	5% .25W CF	
	R 31	58.01.7203			

COMMAND RECEIVER PCB 1.180.436-81/-82 GR30 EL2



- TP 1 = 0,0V
TP 2 = QP - DIR 1
TP 3 = QP - DIR 2
TP 4 = SIGNAL FOR SPEED
REDUCTION
TP 5 = Y2 - SEL - 2
TP 6 = Y2 - SEL - 1
TP 7 = SELECTOR SIGNAL
TP 8 = SELECTOR SIGNAL
TP 9 = SELECTOR SIGNAL
TP10 = +5V
- R 13 = RIGHT WINDING SPEED
R 14 = LEFT REDUCTION
R 31 = OPTICAL TAPE END
SENSOR ADJUST

S1+S2

S1	S2	
H	H	3,75 ips
L	H	7,5 / 3,75 ips
H	L	15 / 7,5 ips
L	L	30 / 15 ips

S3

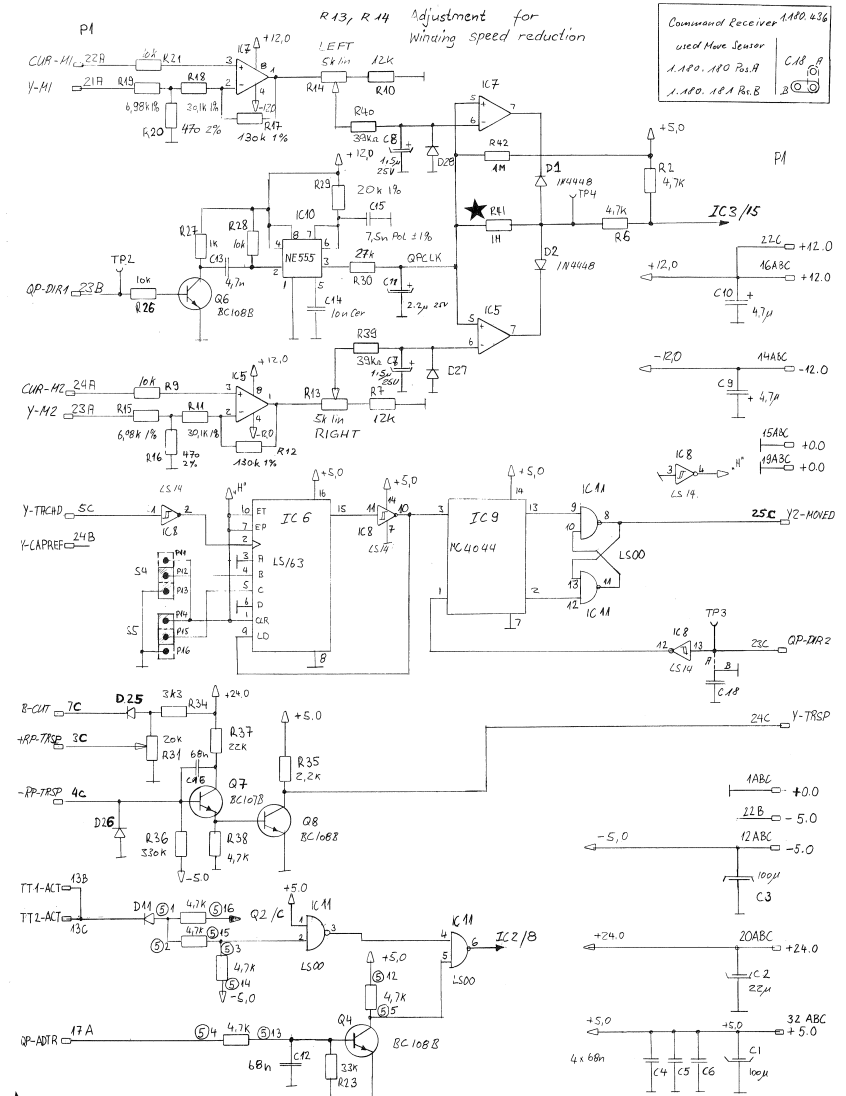
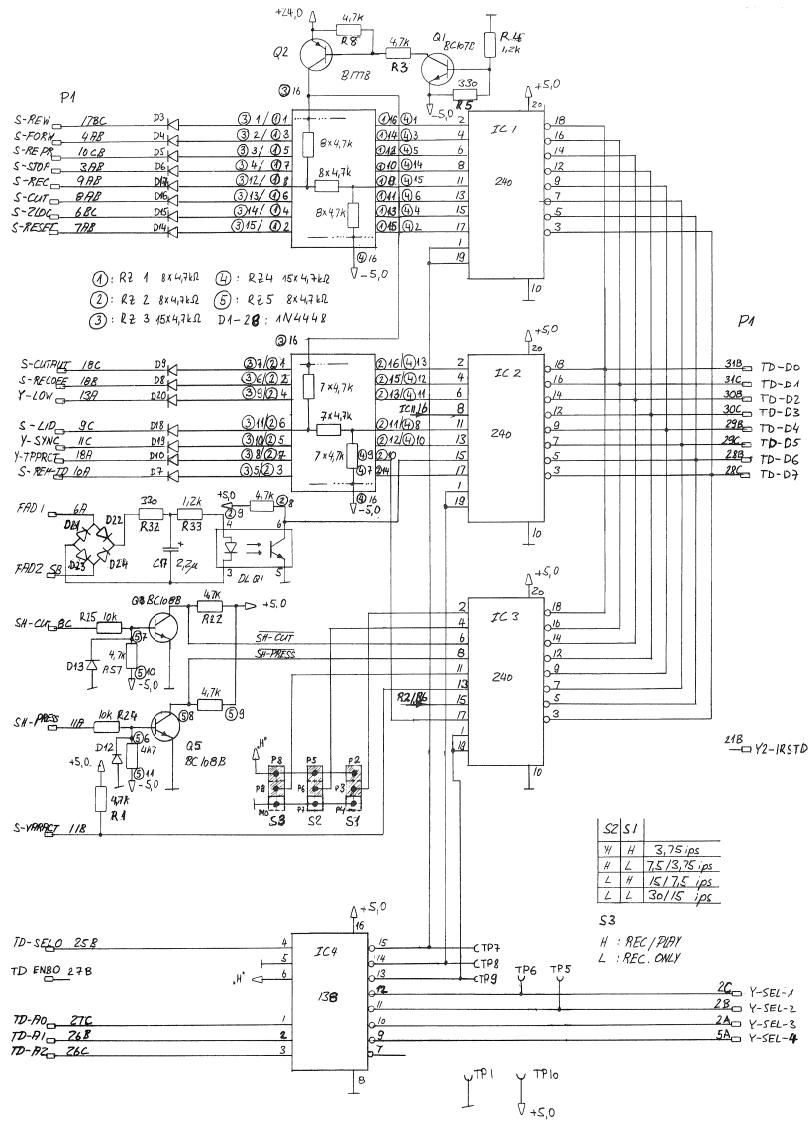
H : REC / PLAY ← Normal position
L : REC. ONLY

S4 + S5

S4	S5	1/
H	H	10
L	H	12
H	L	14
L	L	16

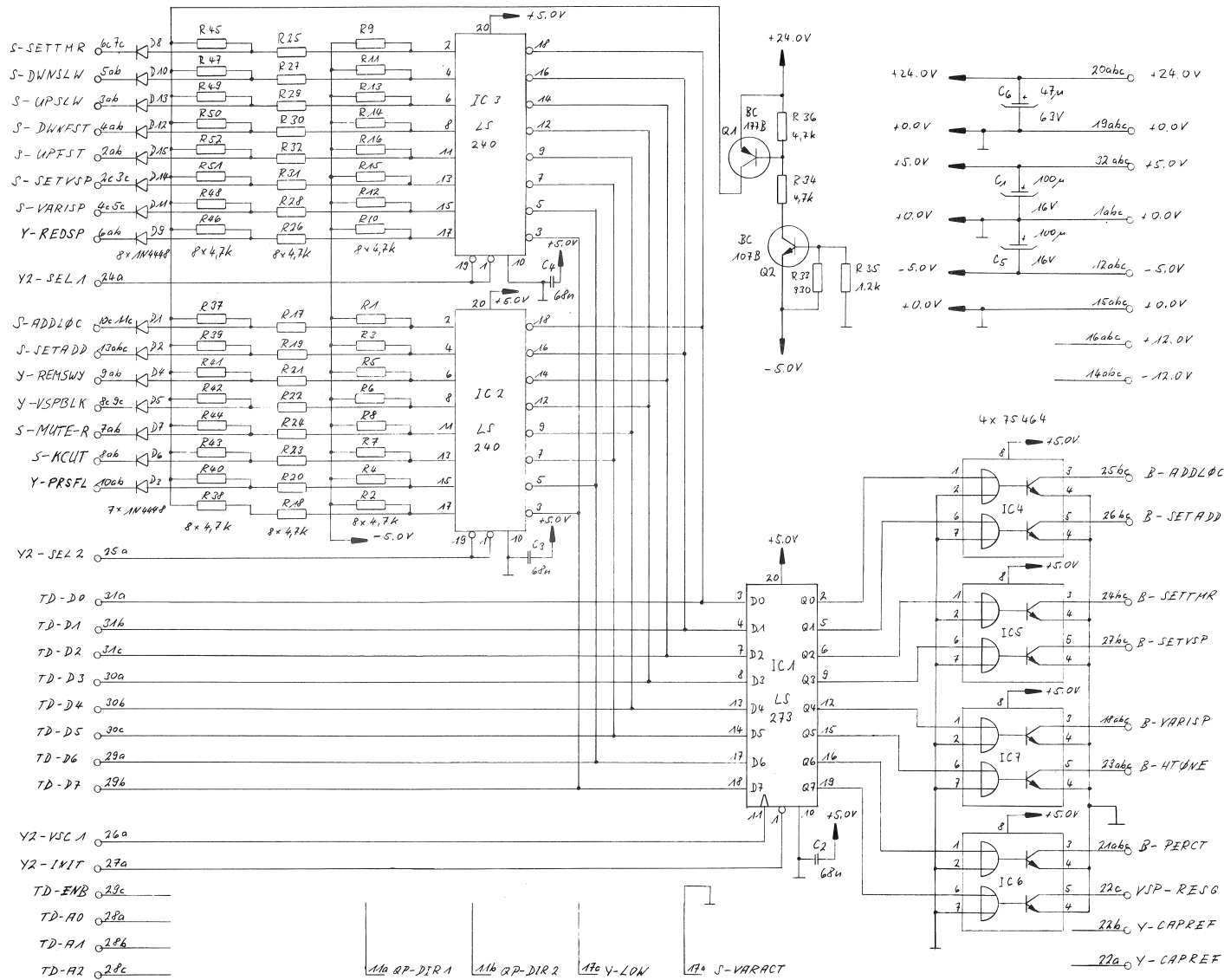
← Normal position

COMMAND RECEIVER PCB 1.180.436-81/-82 GR30 EL2



★ Typical value of R41 for even tape run out speed: 1 M ohm.
Minimum value of R41: 560 K ohm

VARIOSPEED INTERFACE PCB 1.180.440 GR30 EL3



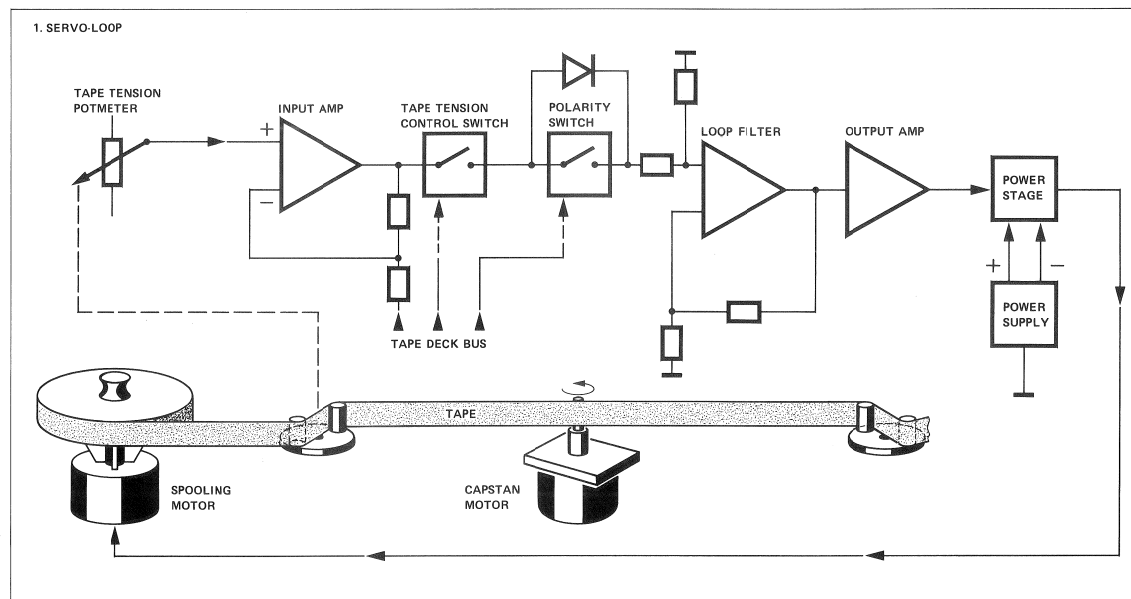
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★ For 1.180.450—00 only

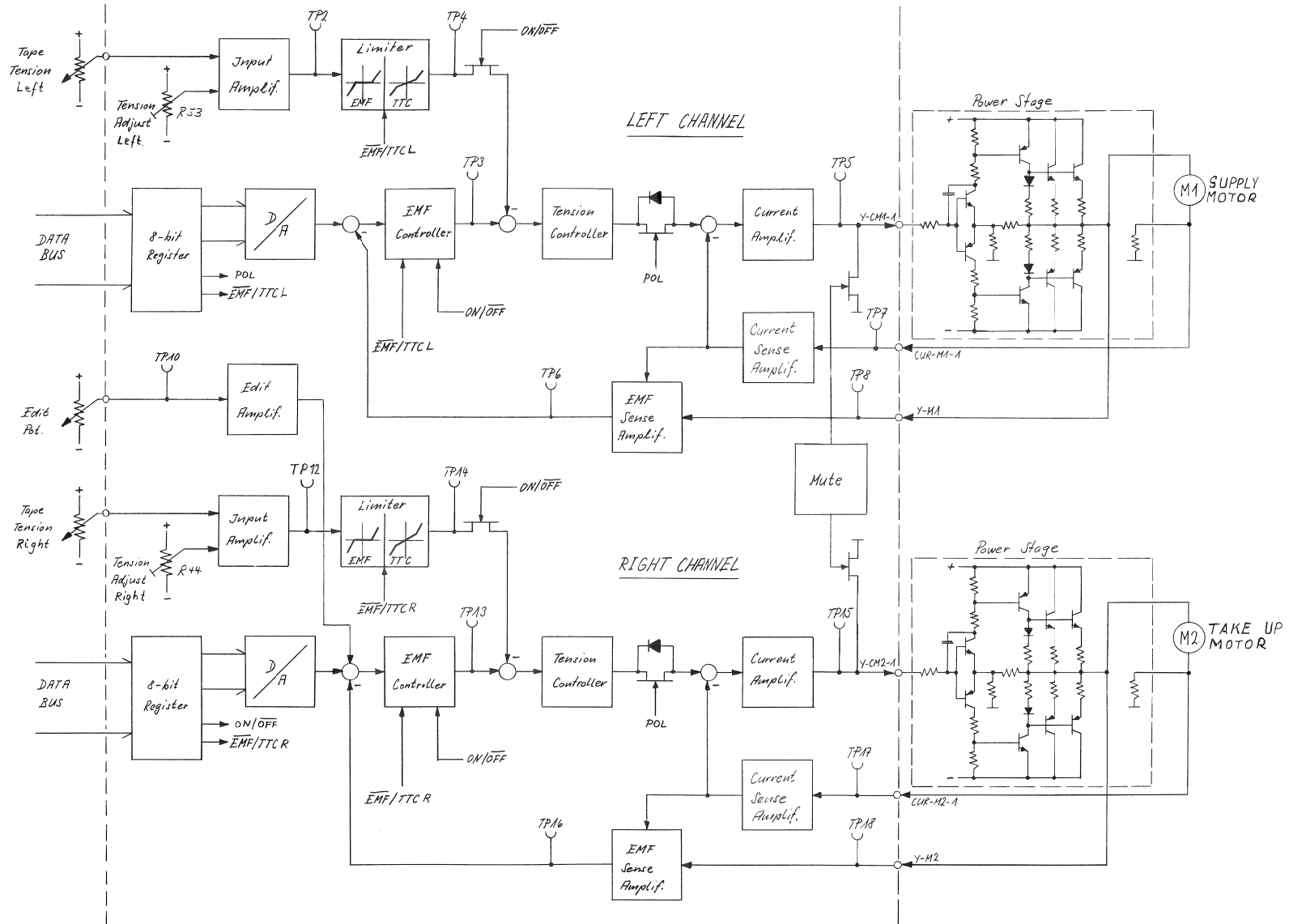
PIN	NO	PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MFG
IC 1	50.06.0273	SN74LS8273	8-Bit D-Flip-Flops		TI
IC 2	50.06.0273	SN74LS8273			
IC 3	50.06.0273	SN74LS8273			
IC 4	50.06.0138	SN74LS138	3 to 8 Line Decoder		TI
IC 5	50.06.0000	SN74LS800	Quad. 2 Input NAND		TI
IC6-29	50.05.0204	SN 71464	Dual 2 Imp. NOR Driver		TI
Q 01	50.03.0409	RC108B	Small signal NPN		any
Q 02	50.03.0409	RC108B			
Q 03	50.03.0409	RC108B			
Q 04	50.03.0408	RC107B			any
Q 05	50.03.0434	BFR 18	Vcbo 85V ICmax=1A		SGS
P 01	54.01.0358	3 x 32	P.Conn.		
R 01	57.11.4332	3.3 k	5% .25W	CP	
R 02	57.11.4122	1.2 k			
R 03	57.11.4471	470			
R 04	57.11.4221	220			
R 05	57.11.4473	47 k			
R 06	57.11.4333	33 k			
R 07	57.11.4334	330 k			
R 08	57.56.5100	10	5W		
R 09	57.11.4103	10 k	.25W	CP	
R 10	57.11.4473	47 k			
R 11	57.11.4101	100			
TF1-10	54.01.0307	10-Fole	J Conn. CIS		
INDI	DATE	NAME			
①			CF = Carbon Film	TI = Texas Instr.	
②					
③					
④					
⑤	4.1.78	Siki/gv			
STUDER			COMMAND DECODER PC CARD	1.80.450- 00	PAGE 2 OF 2

REF	POS NO	PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MFR
	IC 1	50.06.0273	SN74LS273	8-Bit D-Flip-Flops	TI
	IC 2	50.06.0273	SN74LS273		
	IC 3	50.06.0273	SN74LS273		
	IC 4	50.06.0138	SN74LS138	3 to 8 Line Decoder	TI
	IC 5	50.06.0000	SN74LS800	Quad. 2 Input NAND	TI
	IC6-20	50.05.0204	SN 75464	Dual 2 Imp. NOR Driver	TI
	Q 01	50.03.0409	BC108B	Small signal NPN	any
	Q 02	50.03.0409	BC108B		
	Q 03	50.03.0409	BC108B		
	Q 04	50.03.0408	BC107B		any
	Q 05	50.03.0434	BFR 18	VCBO .85V ICMAx=1A	SGS
	P 01	54.01.0358	3 x 32	P.Conn.	
	R 01	57.11.4332	3.3 k	5% .25W	CP
	R 02	57.11.4122	1.2 k		
	R 03	57.11.4471	470		
	R 04	57.11.4221	220		
	R 05	57.11.4473	47 k		
	R 06	57.11.4333	33 k		
	R 07	57.11.4334	330 k		
	R 08	57.56.5100	10	5W	
	R 09	57.11.4103	10 k	.25W	CP
	R 10	57.11.4473	47 k		
	R 11	57.11.4101	100		
	FPI-10	54.01.0207	10-Pole	J Conn. CTS	
ISO	DATE	NAME			
①			CP = Carbon Film	TI = Texas Instr.	
②					
③					
④					
⑤	29.9.83	Biki/gv			
STUDER			COMMAND DECODER PC CARD	1.160.450 - 81	PAGE 2 of 2

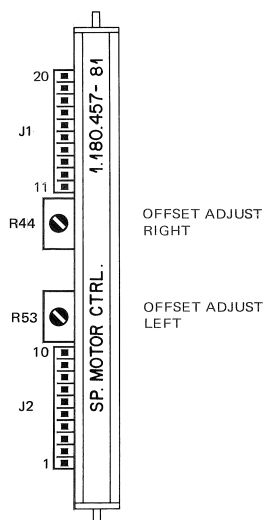
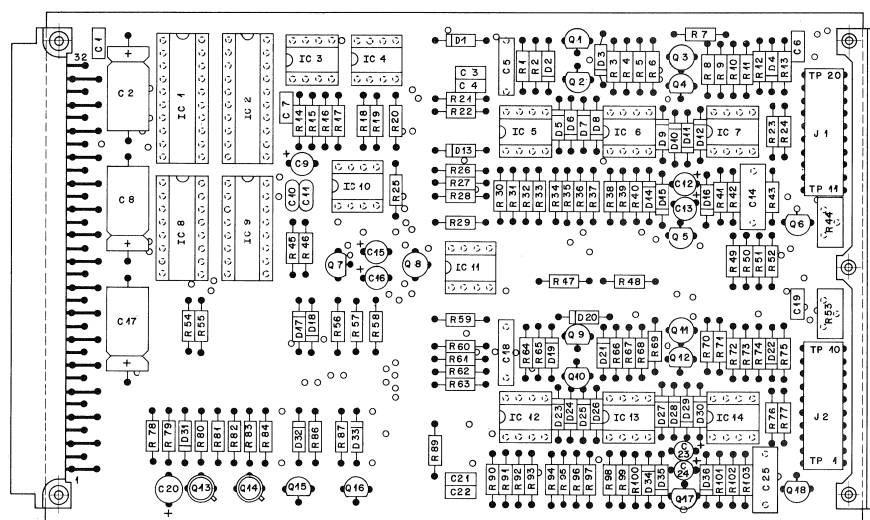
SERVO LOOP / FUNCTION DIAGRAM



SPOOLING MOTOR CONTROL PCB 1.180.457 GR30 EL6



03.06.82



MOTOR RIGHT :

TP 16	VOLTAGE AT M2
TP 17	CURRENT - SENSE SIGNAL M2
TP 16	EMF - VOLTAGE M2
TP 15	DRIVE - VOLTAGE M2
TP 14	TT - SIGNAL WEIGHTED
TP 13	SUMMING - SIGNAL OF DAC, EMP AND BIAS
TP 12	TT - SIGNAL
TP 11	GND

TP 10	V - CUTAUT
TP 9	- 12.0V

MOTOR LEFT :

TP 8	VOLTAGE AT M1
TP 7	CURRENT - SENSE SIGNAL M1
TP 6	EMF - VOLTAGE M1
TP 5	DRIVE - VOLTAGE M1
TP 4	TT - SIGNAL WEIGHTED
TP 3	SUMMING - SIGNAL OF DAC, EMP AND BIAS
TP 2	TT - SIGNAL
TP 1	GND

SPOOLING MOTOR CONTROL PCB 1.180.457-00/-81 GR30 EL6

INDX POS NO	PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MFR
C 1	59.99.0205	68 nF	63V -20% CER	
C 2	59.25.3101	100 µF	16V -10% EL	
C 3	59.99.0205	68 nF	63V -20% CER	
C 4	"	68 nF	"	
C 5	59.31.8472	47 nF	" ±10% MPETP	
C 6	59.99.0205	68 nF	" -20% CER	
C 7	"	68 nF	"	
C 8	59.25.3101	100 µF	16V -10% EL	
C 9	59.36.3100	10 µF	" ±20% TA	
C 10	59.34.2330	33 pF	63V ±5% CER	
C 11	59.34.2330	33 pF	63V ±5% CER	
C 12	59.36.4479	47 µF	25V ±20% TA	
C 13	"	47 µF	"	
C 14	59.31.1224	220 nF	63V " MPETP	
C 15	59.36.4479	47 µF	25V " TA	
C 16	"	47 µF	"	
C 17	59.25.3101	100 µF	16V -10% EL	
C 18	59.31.8472	47 nF	63V " ±10% MPETP	
C 19	59.99.0205	68 nF	" -20% CER	
C 20	59.26.9109	1 µF	40V -20% AL	V _{cc} 12V
C 21	59.99.0205	68 nF	63V -20% CER	
C 22	"	68 nF	"	
C 23	59.36.4479	47 µF	25V ±20% TA	
C 24	"	47 µF	"	
C 25	59.31.1224	220 nF	63V " MPETP	

INDX	DATE	NAME
④		
③		
②		
①		
○	29.9.83	H. Kurz

STUDER	SPOOLING MOTOR CONTROL	1.180.457.81	PAGE 1 OF 2
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INDX POS NO	PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MFR
D 1	50.04.0125	AN 4448	75V Ji	
D 2	"	"	"	
D 3	"	"	"	
D 4	"	"	"	
D 5	"	"	"	
D 6	"	"	"	
D 7	"	"	"	
D 8	"	"	"	
D 9	"	"	"	
D 10	"	"	"	
D 11	50.04.0125	AN 4448	75V Ji	
D 12	"	"	"	
D 13	"	"	"	
D 14	"	"	"	
D 15	50.04.1103	2 75V	U ₂ 75V ±5% 0.4W	
D 16	"	"	"	
D 17	50.04.1117	2 12V	U ₂ 12V " " "	
D 18	50.04.0125	AN 4448	75V	
D 19	"	"	"	
D 20	"	"	"	
D 21	50.04.0125	AN 4448	75V Ji	
D 22	"	"	"	
D 23	"	"	"	
D 24	"	"	"	
D 25	"	"	"	
D 26	"	"	"	
D 27	"	"	"	

INDX	DATE	NAME
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○	29.9.83	H. Kurz

STUDER	SPOOLING MOTOR CONTROL	1.180.457.81	PAGE 2 OF 2
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INDX POS NO	PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MFR
D 28	50.04.0125	AN 4448	75V Ji	
D 29	"	"	"	
D 30	"	"	"	
D 31	"	"	"	
D 32	"	"	"	
D 33	"	"	"	
D 34	"	"	"	
D 35	50.04.1103	2 75V	U ₂ 75V ±5% 0.4W	
D 36	"	"	"	
IC 1	50.06.0273	SN74LS273	Octal buffer/driver 3-STATE TTL	M/TI
IC 2	"	SN74LS273	"	"
IC 3	50.05.0245	RC 4558	Dual OP	TI
IC 4	"	RC 4558	"	"
IC 5	"	RC 4558	"	"
IC 6	"	RC 4558	"	"
IC 7	"	RC 4558	"	"
IC 8	50.99.0123	MC 1408	8-Bit DAC C-MOS	M
IC 9	"	MC 1408	"	"
IC 10	50.05.0245	RC 4558	Dual OP	TI
IC 11	50.05.0245	RC 4558	Dual OP	TI
IC 12	"	RC 4558	"	"
IC 13	"	RC 4558	"	"
IC 14	"	RC 4558	"	"

INDX	DATE	NAME
④		
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STUDER	SPOOLING MOTOR CONTROL	1.180.457.81	PAGE 3 OF 2
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INDX POS NO	PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MFR
J 1	54.01.0307	10 BCL	parallel C's	
J 2	"	10 BCL	"	
P 1	54.01.0368	EUROPA	3+16 Pin	
Q 1	50.03.0350	J 112	J-FET N-CH	Si/N
Q 2	"	J 112	"	"
Q 3	50.03.0323	P 1228	" P-CH	Td/M
Q 4	50.03.0350	J 112	" N-CH	Si/N
Q 5	"	J 112	"	"
Q 6	"	J 112	"	"
Q 7	"	J 112	"	"
Q 8	50.03.0323	P 1228	" P-CH	Td/M
Q 9	50.03.0350	J 112	" N-CH	Si/N
Q 10	"	J 112	"	"
Q 11	50.03.0323	P 1228	J-FET P-CH	Td/M
Q 12	50.03.0350	J 112	" N-CH	Si/N
Q 13	50.03.0306	BC 178 B	U _{CE} 30V PNP	any
Q 14	50.03.0403	BC 108 B	U _{CE} 30V NPN	any
Q 15	50.03.0350	J 112	J-FET N-CH	Si/N
Q 16	"	J 112	"	"
Q 17	"	J 112	"	"
Q 18	"	J 112	"	"

INDX	DATE	NAME
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○	29.9.83	H. Kurz

STUDER	SPOOLING MOTOR CONTROL	1.180.457.81	PAGE 4 OF 2
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SPOOLING MOTOR CONTROL PCB 1.180.457-00/-81 GR30 EL6

IND	POS NO	PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MFR
	R 1	57.11.4473	47k	5% 0,25W CSCH	
	R 2	" 4334	330k	" " "	
	R 3	" 4333	33k	" " "	
	R 4	" 4183	18k	" " "	
	R 5	" 4183	18k	" " "	
	R 6	" 4102	1k	" " "	
	R 7	" 4105	1M	" " "	
	R 8	" 4101	100	" " "	
	R 9	" 4562	5,6k	" " "	
	R 10	" 4332	33k	" " "	
	R 11	57.11.4392	3,9k	5% 0,25W CSCH	
	R 12	" 4152	1,5k	" " "	
	R 13	57.33.2052	20,5k	1% " MF	
	R 14	57.11.4104	100k	5% " CSCH	
	R 15	" 4105	1M	" " "	
	R 16	" 4105	1M	" " "	
	R 17	" 4104	100k	" " "	
	R 18	57.33.3320	332	1% " MF	
	R 19	57.33.2050	205	" " "	
	R 20	57.33.1001	1k	" " "	
	R 21	57.11.4102	1k	5% 0,25W CSCH	
	R 22	57.33.3242	32,4k	1% " MF	
	R 23	57.33.5111	5,1Mk	" " "	
	R 24	57.11.4103	10k	5% " CSCH	
	R 25	57.33.1001	1k	1% " MF	
	R 26	57.33.2741	2,7k	" " "	
	R 27	57.11.4102	1k	5% " CSCH	

IND	DATE	NAME
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○	29.9.83	M. Kurz
STUDER SPOOLING MOTOR CONTROL 1.180.457.81 PAGE 5 OF 8		

IND	POS NO	PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MFR
	R 28	57.33.1102	11k	1% 0,25W MF	
	R 29	57.33.3011	3,01k	" " "	
	R 30	57.33.1001	1k	" " "	
	R 31	57.11.4333	33k	5% 0,25W CSCH	
	R 32	57.33.4751	4,75k	1% " MF	
	R 33	57.11.4102	1k	5% " CSCH	
	R 34	" 4223	22k	" " "	
	R 35	" 4122	1,2k	" " "	
	R 36	" 4332	3,3k	" " "	
	R 37	" 4682	6,8k	" " "	
	R 38	" 4153	15k	" " "	
	R 39	" 4153	15k	" " "	
	R 40	" 4332	3,3k	" " "	
	R 41	57.11.4183	18k	5% 0,25W CSCH	
	R 42	" 4183	18k	" " "	
	R 43	" 4105	1M	" " "	
	R 44	58.01.7501	500	10% " PHG	Cernel
	R 45	57.33.1001	1k	1% " MF	
	R 46	57.33.1001	1k	" " "	
	R 47	57.11.4102	1k	5% " CSCH	
	R 48	" 4102	1k	" " "	
	R 49	" 4123	1,2k	" " "	
	R 50	" 4123	1,2k	" " "	
	R 51	57.11.4123	1,2k	5% 0,25W CSCH	
	R 52	" 4123	1,2k	" " "	
	R 53	58.01.7501	500	10% " PHG	Cernel

IND	DATE	NAME
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○	29.9.83	M. Kurz
STUDER SPOOLING MOTOR CONTROL 1.180.457.81 PAGE 6 OF 8		

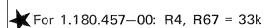
IND	POS NO	PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MFR
	R 54	57.11.4681	680	5% 0,25W CSCH	
	R 55	" 4681	680	" " "	
	R 56	" 4104	100k	" " "	
	R 57	" 4104	100k	" " "	
	R 58	" 4103	10k	" " "	
	R 59	57.33.3011	3,01k	1% " MF	
	R 60	57.33.1102	11k	" " "	
	R 61	57.11.4102	1k	5% 0,25W CSCH	
	R 62	57.33.2741	2,74k	1% " MF	
	R 63	57.33.3242	32,4k	" " "	
	R 64	57.11.4473	47k	5% " CSCH	
	R 65	" 4334	330k	" " "	
	R 66	" 4333	33k	" " "	
	R 67	" 4183	18k	" " "	
	R 68	" 4183	18k	" " "	
	R 69	" 4102	1k	" " "	
	R 70	" 4101	100	" " "	
	R 71	57.11.4105	1M	5% 0,25W CSCH	
	R 72	" 4332	3,3k	" " "	
	R 73	" 4392	3,9k	" " "	
	R 74	" 4152	1,5k	" " "	
	R 75	57.33.2052	20,5k	1% " MF	
	R 76	57.33.5111	5,1Mk	" " "	
	R 77	57.11.4103	10k	5% " CSCH	
	R 78	" 4101	100	" " "	
	R 79	" 4104	100k	" " "	
	R 80	" 4562	5,6k	" " "	

IND	DATE	NAME
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○	29.9.83	M. Kurz
STUDER SPOOLING MOTOR CONTROL 1.180.457.81 PAGE 7 OF 8		

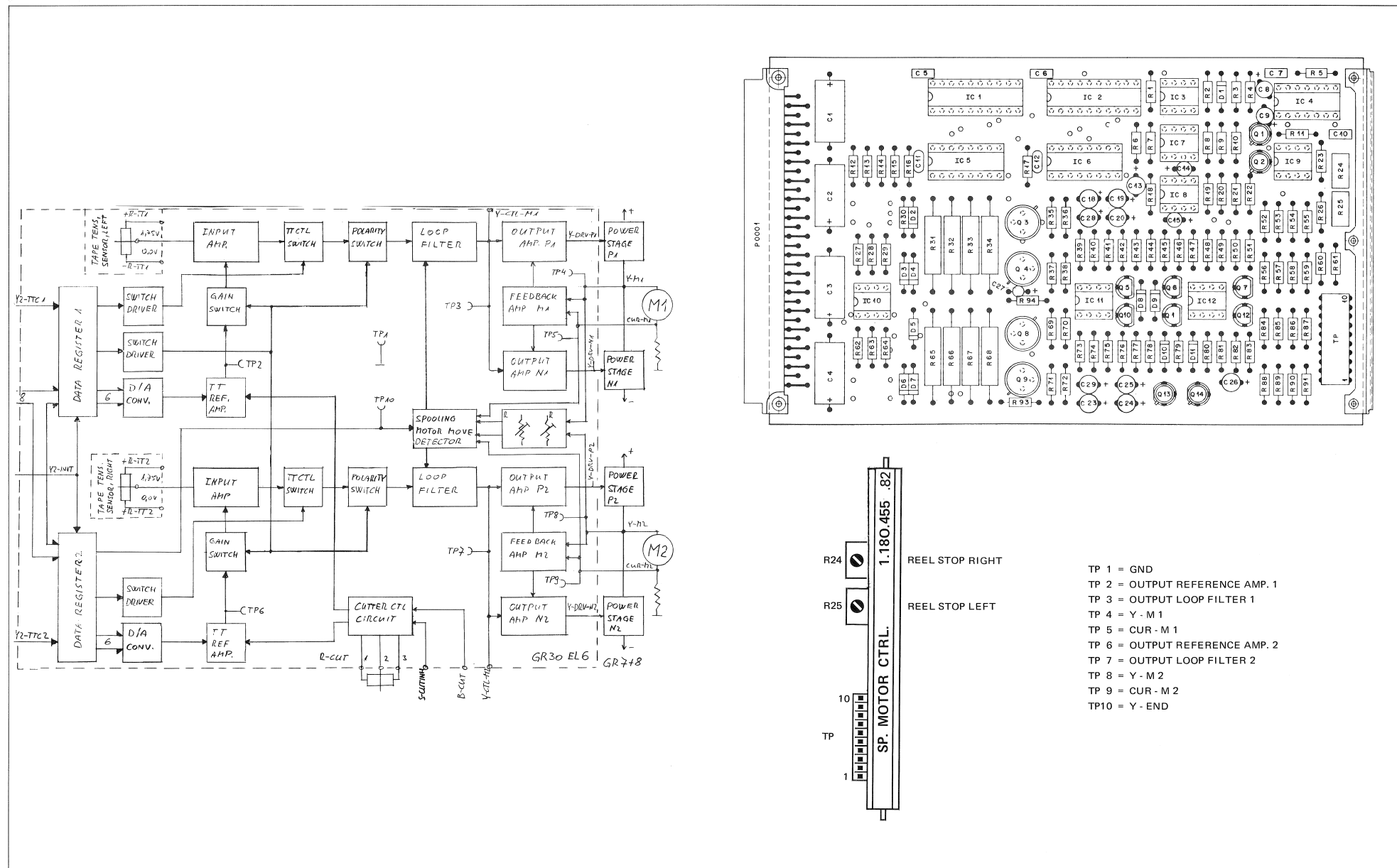
IND	POS NO	PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MFR
	R 81	57.11.4102	1k	5% 0,25W CSCH	
	R 82	" 4821	820	" " "	
	R 83	" 4222	2,2k	" " "	
	R 84	" 4332	3,3k	" " "	
	R 86	" 4102	1k	" " "	
	R 87	" 4102	1k	" " "	
	R 89	" 4102	1k	" " "	
	R 90	57.33.1001	1k	1% " MF	
	R 91	57.11.4333	33k	5% 0,25W CSCH	
	R 92	57.33.4751	4,75k	1% " MF	
	R 93	57.11.4102	1k	5% " CSCH	
	R 94	" 4223	22k	" " "	
	R 95	" 4122	1,2k	" " "	
	R 96	" 4332	3,3k	" " "	
	R 97	" 4682	6,8k	" " "	
	R 98	" 4153	15k	" " "	
	R 99	" 4153	15k	" " "	
	R 100	" 4332	3,3k	" " "	
	R 101	57.11.4183	18k	5% 0,25W CSCH	
	R 102	" 4183	18k	" " "	
	R 103	" 4105	1M	" " "	

IND	DATE	NAME
④		
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○	29.9.83	M. Kurz
STUDER SPOOLING MOTOR CONTROL 1.180.457.81 PAGE 8 OF 8		

CORRESPONDING WITH SPOOLING MOTOR
POWER UNIT 1.180.501 ONLY



SPOOLING MOTOR CONTROL PCB 1.180.455-82 GR30 EL6



SPOOLING MOTOR CONTROL PCB 1.180.455-82 GR30 EL6

IND	POS NO	PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MFR
	C 01	59.25.3101	100 U	16V EL	
	C 02	59.25.3101	100 U		
	C 03	59.25.3101	100 U		
	C 04	59.25.3101	100 U		
	C 05	59.99.0205	68 N	63V CER	
	C 06	59.99.0205	68 N		
	C 07	59.99.0205	68 N		
	C 08	59.36.3100	10 U	16V TA	
	C 09	59.36.3100	10 U		
	C 10	59.99.0205	68 N	63V CER	
	C 11	59.32.1330	33 P	500V CER	
	C 12	59.32.1330	33 P		
	C 13	59.36.3100	10 U	16V TA	
	C 14	59.30.4101	100 U	16V TA	
	C 15	59.30.4101	100 U		
	C 16				
	C 17				
3	C 18	59.36.3220	22 U	16V TA	
3	C 19	59.36.3100	10 U	16V TA	
	C 20	59.36.3100	10 U	16V TA	
	C21,22				
4	C 23	59.36.4689	6,8 U	25V TA	
3	C 24	59.36.3100	10 U	16V TA	
	C 25	59.36.3100	10 U	16V TA	
	C 26	59.30.8109	1 U	50V TA	
	C 27	59.30.8109	1 U		
3	C 28	59.36.3220	22 U	16V TA	
4	C 29	59.36.4689	6,8 U	25V TA	
	D 01	50.04.1119	BZX83C15V	Z	
	D2-11	50.04.0125	1N4448		any

IND	DATE	NAME
④	05.82	Rö 82
③	6.6.79	Ha 81
②	24.4.79	Wth
①	22.12.78	Ha
○	13.3.78	Siki/gv
STUDER SPOOLING MOTOR CONTROL 1.180.455-82 PAGE 1 OF 6		

IND	POS NO	PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MFR
	R 01	57.39.1001	1 k	1% D2,5 MF	
	R 02	57.11.4472	4,7 k	5% .25W CF	
	R 03	57.11.4103	10 k		
	R 04	57.11.4103	10 k		
	R 05	57.11.4683	68 k		
	R 06	57.39.1001	1 k	1% D2,5 MF	
	R 07	57.11.4331	330	5% .25W CF	
	R 08	57.11.4102	1 k		
	R 09	57.11.4103	10 k		
	R 10	57.11.4102	1 k		
	R 11	57.11.4683	68 k		
	R 12	57.11.4332	3,3 k		
	R 13	57.11.4332	3,3 k		
	R 14	57.11.4332	3,3 k		
	R 15	57.11.4332	3,3 k		
	R 16	57.39.1001	1 k	1% D2,5 MF	
	R 17	57.39.1001	1 k		
	R 18	57.11.4221	220	5% .25W CF	
	R 19	57.11.4102	1 k		
3	R 20	57.11.4391	390		
3	R 21	57.11.4391	390		
	R 22	57.11.4105	1 M		
	R 23	57.11.4331	330		
	R 24	58.01.7501	500	10% .5 W PMG	
	R 25	58.01.7501	500		
	R 26	57.11.4331	330	5% .25W CF	
	R 27	57.11.4223	22 k		
	R 28	57.11.4102	1 k		
	R 29	57.11.4102	1 k		
2	R 30	57.11.4823	82 k		

IND	DATE	NAME
④	05.82	Rö 82
③	6.6.79	Ha 81
②	24.4.79	Wth
①	22.12.78	Ha
○	13.3.78	Siki/gv
STUDER SPOOLING MOTOR CONTROL 1.180.455-82 PAGE 3 OF 6		

IND	POS NO	PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MFR
	IC 1	50.06.0273	SN74LS273	8-Bit D-Flip-Flops	TIL
	IC 2	50.06.0273	SN74LS273		
	IC 3	50.05.0245	RC 4558	Dual Op.Amp.	
	IC 4	50.05.0228	SN75107A	Dual Line Receiver	
	IC 5	50.99.0123	MC1408LB	8-Bit DAC	
	IC 6	50.99.0123	MC1408LB		
	IC 7	50.05.0245	RC 4558	Dual Op.Amp.	
	IC 8	50.05.0245	RC 4558		
	IC 9	50.05.0203	SN75463	Dual 2-Inv. OR Driver	
	IC 10	50.05.0245	RC 4558	Dual Op.Amp.	
	IC 11	50.05.0245	RC 4558		
	IC 12	50.05.0245	RC 4558		
	P 01	54.01.0368	3 x 16Pole		
	Q 01	50.03.0306	BC 178 B	Small signal PNP	any
	Q 02	50.03.0409	BC 108 B	Small signal NPN	any
	Q 03	50.03.0316	BC 140-16	NPN FBC140-16	P,F
	Q 04	50.03.0315	BC 160-16	PNP FBC160-16	P,F
	Q 05	50.03.0442	SFF 323	N-FET 2N5485	M
	Q 06	50.03.0442	SFF 323		
	Q 07	50.03.0442	SFF 323		
	Q 08	50.03.0316	BC 140-16	NPN FBC140-16	P,F
	Q 09	50.03.0315	BC 160-16	PNP FBC160-16	P,F
	Q 10	50.03.0442	SFF 323	N-FET 2N5485	M
	Q 11	50.03.0442	SFF 323		
	Q 12	50.03.0442	SFF 323		
	Q 13	50.03.0306	BC178 B	Small signal PNP	any
	Q 14	50.03.0306	BC 178 B		

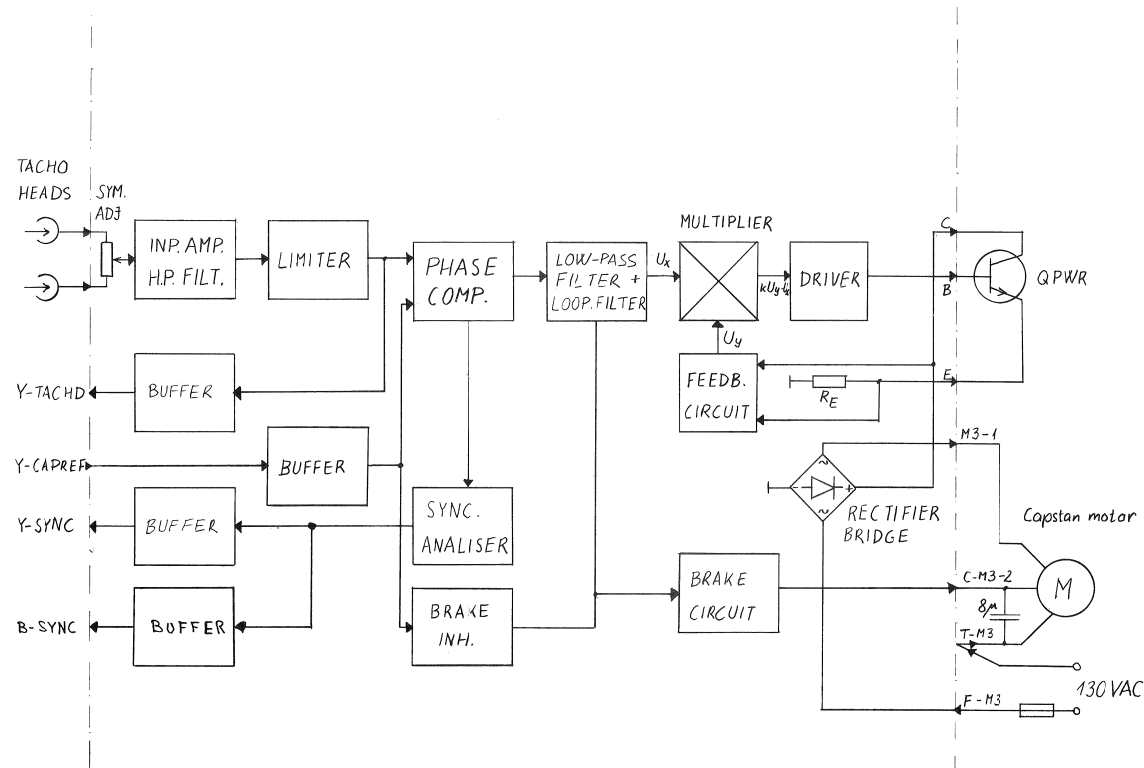
IND	DATE	NAME
④	05.82	Rö 82
③	6.6.79	Ha 81
②	24.4.79	Wth
①	22.12.78	Ha
○	13.3.78	Siki/gv
STUDER SPOOLING MOTOR CONTROL 1.180.455-82 PAGE 2 OF 6		

IND	POS NO	PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MFR
	R 31	57.99.0196	330	10% 3W DR	
	R 32	57.99.0196	330		
	R 33	57.99.0195	100		
	R 34	57.99.0195	100		
	R 35	57.11.4101	100	5% .25W CF	
	R 36	57.11.4104	100 k		
	R 37	57.11.4101	100		
	R 38	57.11.4562	5,6 k		
3	R 39	57.11.4223	22 k		
	R 40	57.11.4473	47 k		
3	R 41	57.11.4102	1 k		
	R 42	57.11.4103	10 k		
	R 43	57.11.4183	18 k		
	R 44	57.11.4105	1 M		
	R 45	57.11.4105	1 M		
	R 46	57.11.4105	1 M		
	R 47	57.11.4105	1 M		
	R 48	57.11.4103	10 k		
	R 49	57.11.4104	100 k		
	R 50	57.11.4102	1 k		
	R 51	57.11.4471	470		
	R 52	57.11.4103	10 k		
	R 53	57.11.4105	1 M		
	R 54	57.11.4472	4,7 k		
	R 55	57.11.4472	4,7 k		
	R 56	57.11.4103	10 k		
	R 57	57.11.4332	3,3 k		
	R 58	57.11.4332	3,3 k		
	R 59	57.11.4332	3,3 k		
	R 60	57.11.4682	6,8 k		

IND	DATE	NAME
④	05.82	Rö 82
③	6.6.79	Ha 81
②	24.4.79	Wth
①	22.12.78	Ha
○	13.3.78	Siki/gv
STUDER SPOOLING MOTOR CONTROL 1.180.455-82 PAGE 4 OF 6		

[illegible]

CAPSTAN SERVO PCB 1.180.460-82 GR30 EL7



INDI POS NO	PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MFR
C 01	59.25.5220	22 μ	-10% 40V EL	
C 02	59.36.4109	1 μ	20% 25V TA	
C 03	59.25.3101	100 μ	-10% 16V EL	
C 04	59.32.3103	10 n	+80% 40V CER	
C 05	59.36.2479	4,7 μ	20% 10V TA	
C 06	59.31.6223	22 n	10% 100V MPETP	
C 07	59.31.6223	22 n		
C 08	59.31.6223	22 n		
C 09	59.31.4473	47 n	20% 160V	
C 10	59.32.0101	0,1 n	20% 10V	
C 11	59.32.0101	0,1 n	20% 10V	
C 12	59.35.3101	100 μ	-10% 16V EL	
C 13	59.31.9104	0,1 μ	10% 160V MPETP	
C 14	59.25.3101	100 μ	-10% 16V EL	
C 15	59.39.0205	68 n	-20% 63V CER	
C 16	59.31.9104	0,1 μ	10% 160V MPETP	
C 17	59.31.9104	0,1 μ		
C 18	59.31.1333	33 n	20% 100V	
C 19	59.39.0205	68 n	-20% 63V CER	
C 20	59.36.4109	1 μ	20% 25V TA	
C 21	59.31.6474	0,47 μ	10% 100V MPETP	
C 22	59.31.0334	0,33 μ	20% 63V MPETP	
C 23	59.25.3101	100 μ	-10% 16V EL	
C 24	59.39.0450	0,47 μ	10% 150V MP	
C 25	59.30.1101	100 μ	-20% 3 V TA	
C 26	59.31.0334	0,33 μ	20% 63V MPETP	

INDI	DATE	NAME	
④			EL = Electrolytic
③			TA = Tantalum
②			CER = Ceramic
①	20.5.80	Keller ②	MPETP = Met.Polyester
①	8.8.79	Keller/gv	
STUDER			Capstan - Servo
			PL 1.180.460.92
			PAGE 1 OF 6

INDI POS NO	PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MFR
D 01	50.04.0125	1N4448		
D 02	50.04.1107	D 3.3	5% 3.3V .4W Z	
D 03	50.04.0125	1N4448		
D 04	50.04.0125	1N4448		
D 05	50.04.0125	1N4448		
D 06	50.04.0125	1N4448		
D 07	50.04.0125	1N4448		
D 08	50.04.0125	1N4448		
D 09	50.04.0105	1N4004		
D 10	50.04.0105	1N4004		
D 11	50.04.1125	D 3.0	5% 3.0V .4W Z	
D 12	50.04.1101	D 3.9	5% 3.9V .4W Z	
D 13	50.04.0125	1N4448		
D 14	50.04.0125	1N4448		
D 15	70.01.0223	B250C800	DZ SI	
D 16	50.04.0125	1N4448		
D 17	50.04.0125	1N4448		
D 18	50.04.0125	1N4448		
D 19	50.04.0125	1N4448		
DI 01	50.04.2107	555-2007RT	ELD 5V 3mA red	DI
IC 01	50.05.0245	RC4558	Dual Op.Amp.	TI,M
IC 02	50.06.0195	SN74LS195	AN 4.Bit paral.load.shift.reg.	TI
IC 03	50.06.0132	SN74LS132	N Quad NAND Gates Schmitttrigger	TI
IC 04	50.06.0000	SN74LS00	N Quad NAND Gates	
IC 05	50.05.0245	RC4558	Dual Op.Amp.	TI,M
IC 06	50.05.0255	J 411	Dual N Channel J Fet	NS,SH
IC 07	50.05.0245	RC4558	Dual Op.Amp.	TI,M

INDI	DATE	NAME	
④			DI = Dialco
③			M = Motorola
②			TI = Texas Instr.
①	20.5.80	Keller ②	NS = National Semiconductors
①	8.8.79	Keller/gv	STL = Silco
STUDER			Capstan - Servo
			PL 1.180.460.82
			PAGE 2 OF 6

INDI	POS NO	PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MFR
	P 01	54.01.0368	3 x 16	Plug	B
	Q 01	50.03.0409	BC108B	NPN	
	Q 02	50.03.0471	2SC782	NPN Power	2N3584 RCA
	Q 03	50.03.0408	BC107B	NPN	
	Q 04	50.03.0408	BC107B	NPN	
	Q 05	50.03.0409	BC108B	NPN	
	Q 06	50.03.0409	BC108B	NPN	
	Q 07	50.03.0434	BFR 18	NPN	
	Q 08	50.03.0434	BFR 18	NPN	
	Q 09	50.03.0408	BC107B	NPN	
	Q 10	50.03.0408	BC107B	NPN	
	Q 11	50.03.0409	BC108B	NPN	
	Q 12	50.03.0306	BC178B	PNP	
	R 01	57.11.4123	12 k	5% .25W CF	
	R 02	57.11.4681	680		
	R 03	57.11.4333	33 k		
	R 04	57.11.4273	27 k		
①	R 05				
	R 06	57.11.4103	10 k		
①	R 07				
①	R 08	57.11.4132	3,3 k		
①	R 09				
	R 10	57.11.4221	220		
	R 11	57.11.4124	120 k		
	R 12	57.11.4103	10 k		
	R 13	57.11.4102	1 k		

INDI	DATE	NAME	
④			
③			
②			
①	20.5.80	Keller 82	
○	8.8.79	Keller/gv	

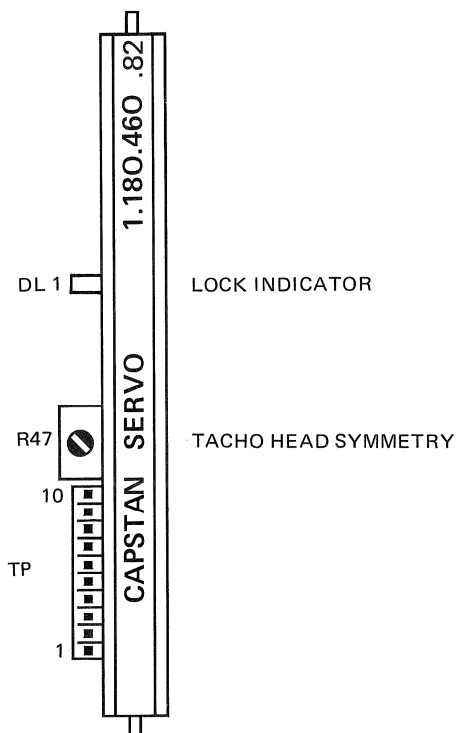
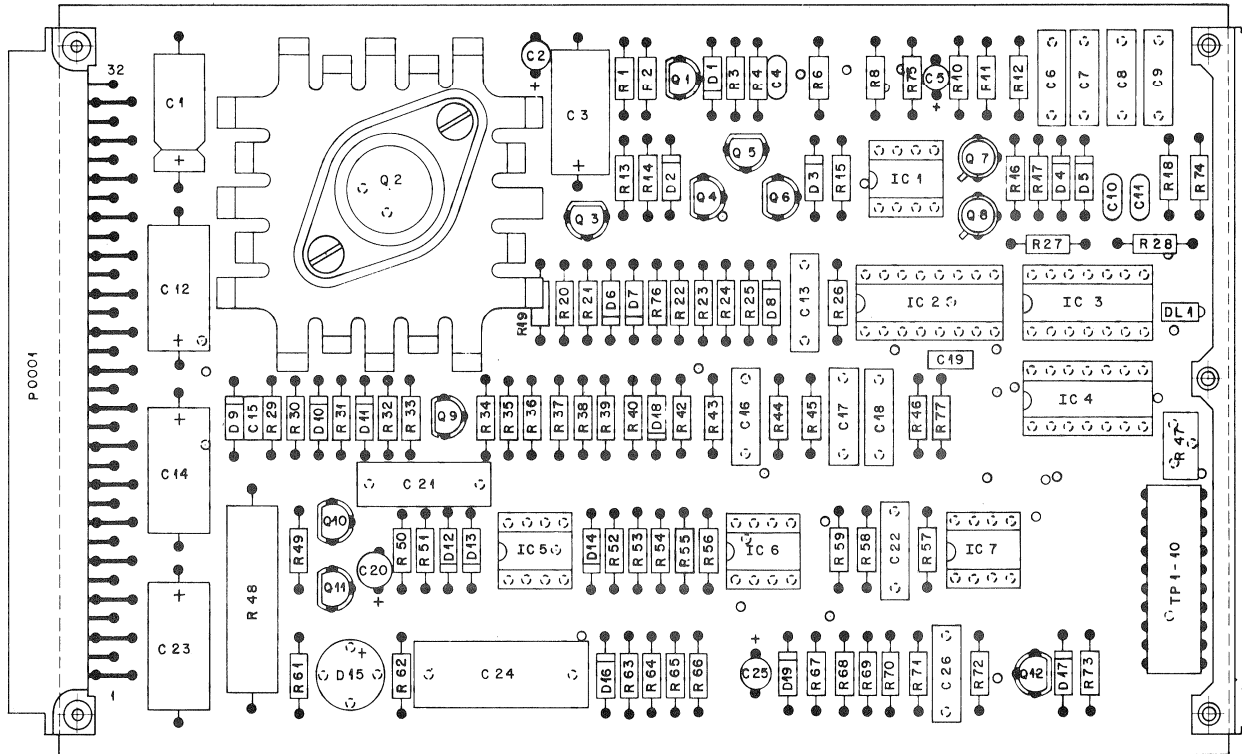
STUDER	Capstan - Servo	PL 1.180.460.82	PAGE 3 OF 6
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INDI	POS NO	PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MFR
①	R 14	57.11.4102	1 k	5% .25W CF	
	R 15	57.11.4102	1 k		
	R 16	57.11.4103	10 k		
	R 17	57.11.4103	10 k		
	R 18	57.11.4223	22 k		
	R 19	57.11.4333	33 k		
	R 20	57.11.4102	1 k		
	R 21	57.11.4153	15 k		
	R 22	57.11.4103	10 k		
	R 23	57.11.4102	1 k		
	R 24	57.11.4472	4,7 k		
	R 25	57.11.4472	4,7 k		
	R 26	57.11.4273	27 k		
	R 27	57.11.4471	470		
	R 28	57.11.4471	470		
	R 29	57.11.4101	100		
	R 30	57.11.4569	5,6		
	R 31	57.11.4333	33 k		
①	R 32	57.11.4683	68 k		
	R 33	57.11.4333	33 k		
	R 34	57.11.4103	10 k		
	R 35	57.11.4184	180 k		
	R 36	57.11.4562	5,6 k		
	R 37	57.11.4122	1,2 k		
	R 38	57.11.4154	150 k		
	R 39	57.11.4103	10 k		
	R 40	57.11.4105	1 M		
①	R 41				
	R 42	57.11.4472	4,7 k		
	R 43	57.11.4472	4,7 k		

INDI	DATE	NAME	
④			
③			
②			
①	20.5.80	Keller 82	
○	8.8.79	Keller/gv	

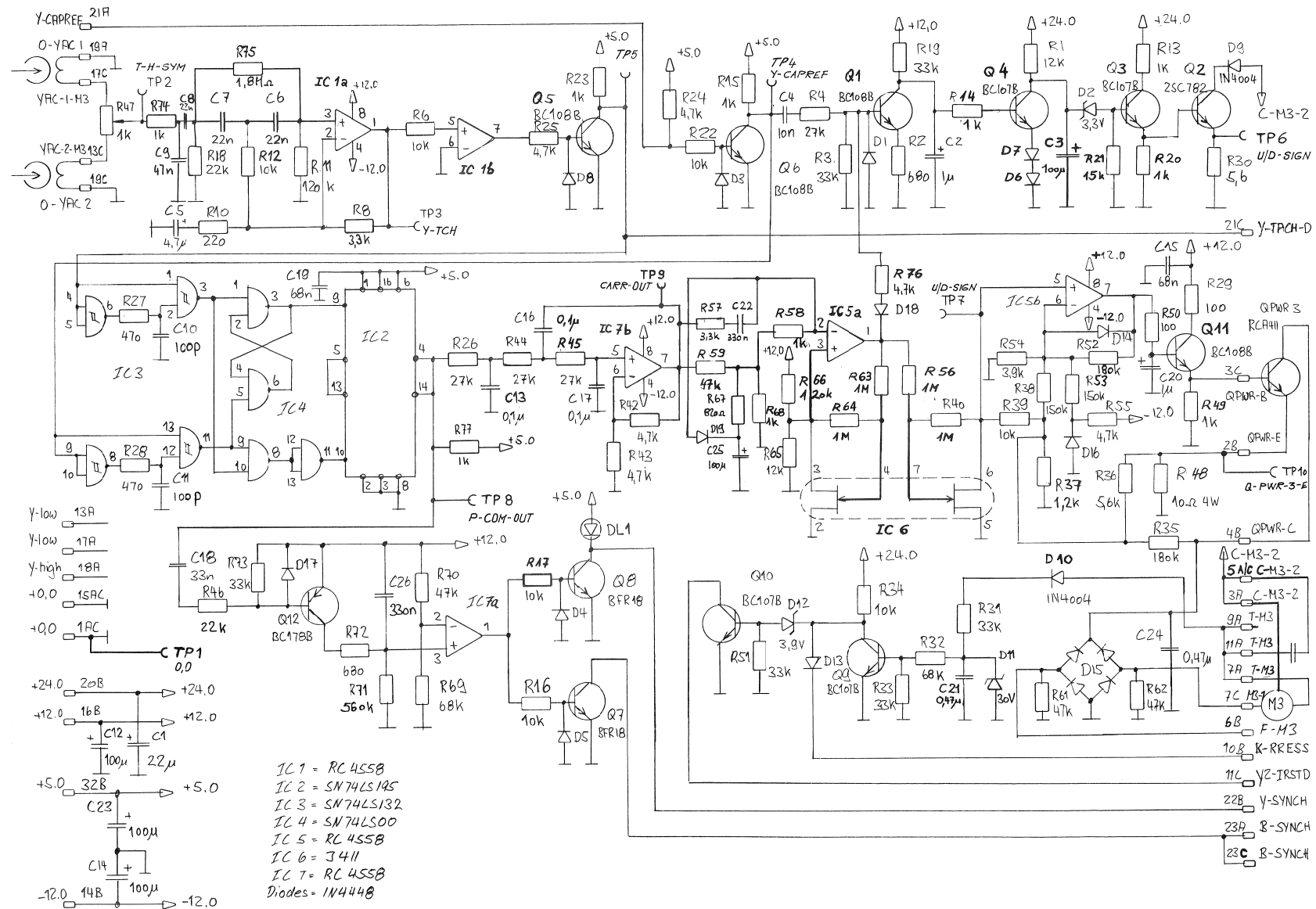
STUDER	Capstan - Servo
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CAPSTAN SERVO PCB 1.180.460-82 GR30 EL7

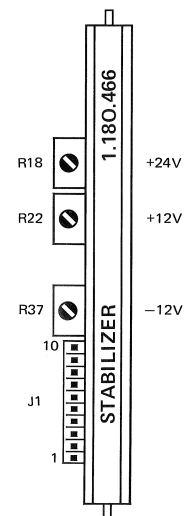
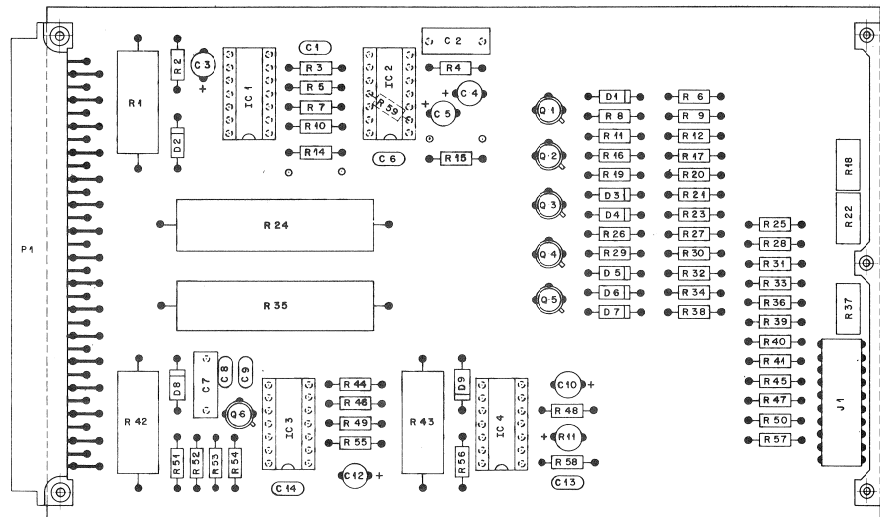
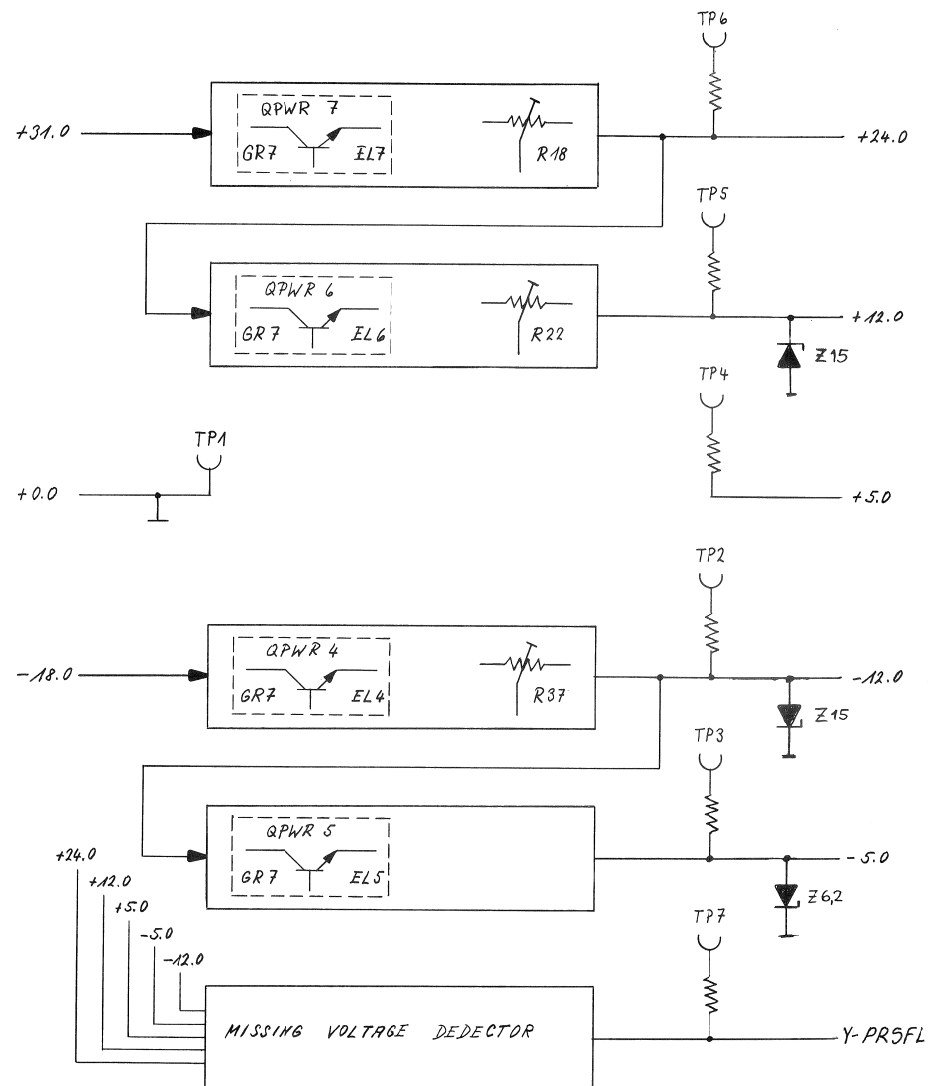


- TP 1 = GND (0,0)
- TP 2 = TACHO HEAD SYMMETRY (T-H-SYM)
- TP 3 = TACHOSIGNAL (Y-TCH)
- TP 4 = Y-CAPREF
- TP 5 = Y-TACHO
- TP 6 = UP + DOWN SIGNAL (U/D-SIGN)
- TP 7 = UP + DOWN SIGNAL (U/D-SIGN)
- TP 8 = OUTPUT PHASE COMPARATOR (P-COM-CUT)
- TP 9 = OUTPUT CARRIER FILTER (CARR-OUT)
- TP10 = EMITTER OF CTL TRANSISTOR (QPWR-3-E)

CAPSTAN SERVO PCB 1.180.460-82 GR30 EL7

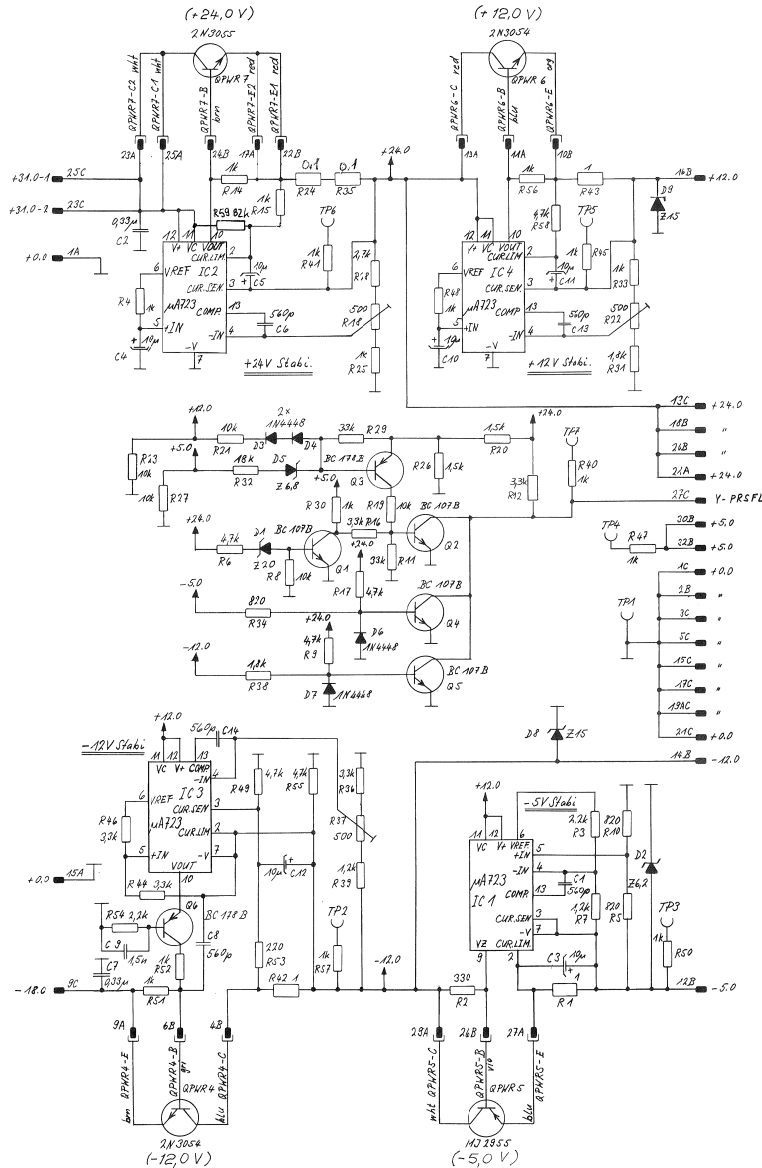


STABILIZER PCB 1.180.466-81 GR30 EL8



TP 1 = 0V
 TP 2 = -12V
 TP 3 = -5V
 TP 4 = +5,2V
 TP 5 = +12V
 TP 6 = +24V
 TP 7 =
 TP 8 =
 TP 9 =
 TP10 =

STABILIZER PCB 1.180.466-81 GR30 EL8



INDI	POS NO	PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MFR
	C1	59.32.0561	560pF	40 V 20% RER	
	C2	59.34.0334	833pF	63V 10% MPETP	
	C3	59.36.3100	10uF	16V 20% TA	
	C4	"	"	" " " "	
	C5	"	"	" " " "	
	C6	59.32.0561	560pF	40 V 10% HER	
	C7	59.34.0334	833pF	63V 10% MPETP	
	C8	59.32.0561	560pF	40 V 10% HER	
	C9	59.32.1151	10uF	40 V 20% TA	
	C10	59.36.3100	10uF	16V 20% TA	
	C11	"	"	" " " "	
	C12	"	"	" " " "	
	C13	59.32.0561	560pF	60 V 10% HER	
	C14	"	"	" " " "	
	D1	50.04.1109	32X 20V	400uN Z	
	D2	50.04.1511	32X 62V	1.3V Z	
	D3	50.04.0115	1N4448	75V J	
	D4	"	"	" " " "	
	D5	50.04.1102	32X 68V	400uN Z	
	D6	50.04.0115	1N4448	75V J	
	D7	"	"	" " " "	
	D8	50.04.1511	32X 65V	1.3V Z	
	D9	"	"	" " " "	
	J1	54.01.0107	10PBR	parallel C's AMP	

INDI	DATE	NAME
①		
②		
③	1.10.81	DB - 81
④	15.2.80	DB
⑤	31.1.73	H. Kuro
STUDER STABILIZER 1.180.466-81 PAGE 1 OF 4		

INDI	POS NO	PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MFR
	IC1	50.05.0115	HA723	VOLTAGE REGULATOR	
	IC2	"	"	"	
	IC3	"	"	"	
	IC4	"	"	"	
	PA	54.01.0368	EUROPA	3x16	
	Q1	50.03.0608	BC107B	Uc8 30 V NPN	
	Q2	"	"	"	
	Q3	50.03.0306	BC107B	Uc8 25V PNP	
	Q4	50.03.0608	BC107B	Uc8 30 V NPN	
	Q5	"	"	"	
	Q6	50.03.0306	BC107B	Uc8 25V PNP	
	R1	57.56.5109	1.2	10% 4W DR	
	R2	57.11.4334	330Ω	5% 0.25W CSCH	
	R3	"	4332	2.2kΩ	
	R4	"	4102	1kΩ	
	R5	"	4114	220Ω	
	R6	"	4478	6.7kΩ	
	R7	"	4112	1.1kΩ	
	R8	"	4103	10kΩ	
	R9	"	4478	6.7kΩ	
	R10	57.11.4314	820Ω	5% 0.25W CSCH	
	R11	"	4333	33kΩ	
	R12	"	4332	3.3kΩ	
	R13	57.11.4102	1kΩ	5% 0.25W CSCH	
	R14	"	"	"	
	R15	"	"	"	

INDI	DATE	NAME
①		
②		
③	1.10.81	DB - 81
④	15.2.80	DB
⑤	31.1.73	H. Kuro
STUDER STABILIZER 1.180.466-81 PAGE 2 OF 4		

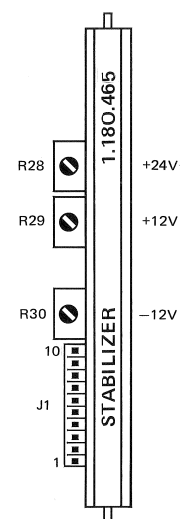
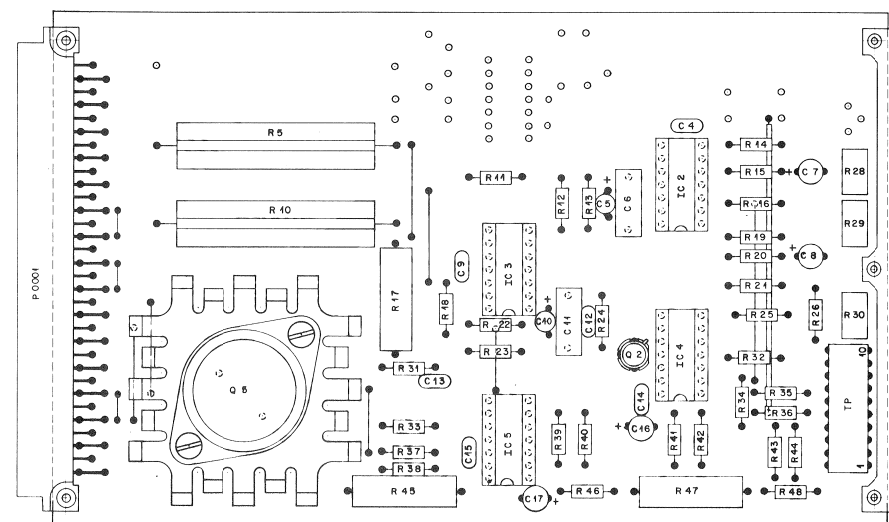
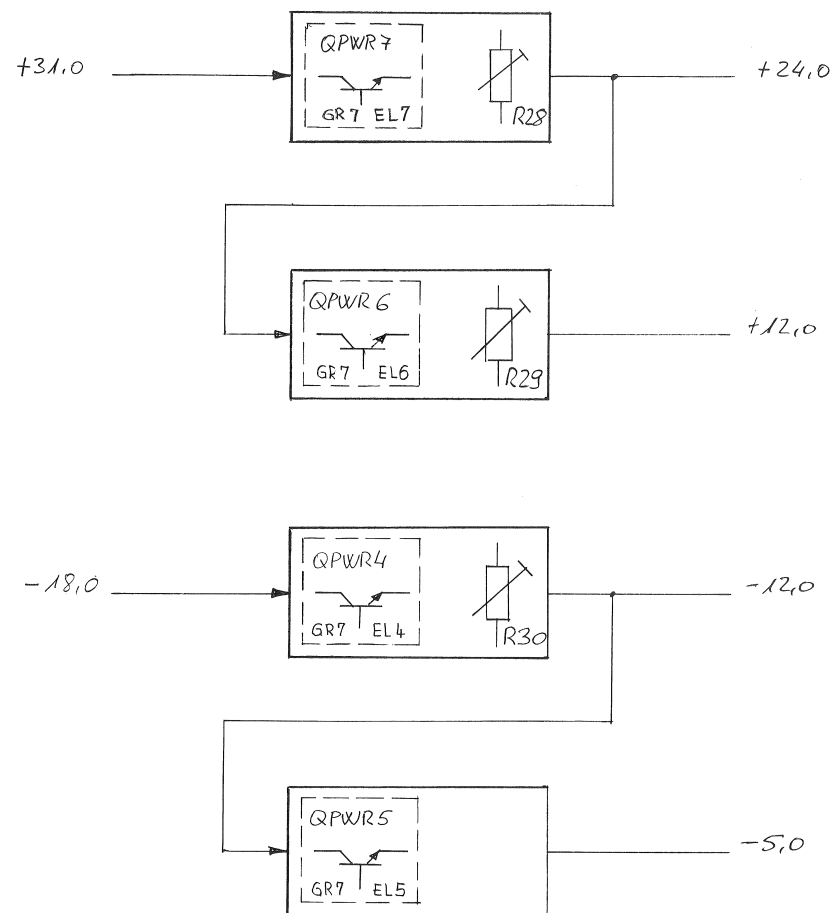
INDI	POS NO	PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MFR
	R16	57.11.4332	3.3kΩ	5% 0.25W CSCH	
	R17	"	4672	4.7kΩ	
	R18	52.01.7504	500Ω	10% 0.5W PMG	
	R19	57.11.4103	10kΩ	5% 0.25W CSCH	
	R20	57.11.4102	1.5kΩ	5% 0.25W CSCH	
	R21	"	4103	10kΩ	
	R22	57.01.7504	500Ω	10% 0.5W PMG	
	R23	57.11.4103	10kΩ	5% 0.25W CSCH	
	R24	57.56.5108	0.5Ω	10% 4W DR	
	R25	57.11.4102	1kΩ	5% 0.25W CSCH	
	R26	"	4152	1.5kΩ	
	R27	"	4103	10kΩ	
	R28	"	4172	2.7kΩ	
	R29	"	4333	3.3kΩ	
	R30	57.11.4102	1kΩ	5% 0.25W CSCH	
	R31	"	4112	1.1kΩ	
	R32	"	4183	18kΩ	
	R33	"	4112	1.1kΩ	
	R34	"	4114	220Ω	
	R35	57.56.5108	0.5Ω	10% 4W DR	
	R36	57.11.4332	3.3kΩ	5% 0.25W CSCH	
	R37	57.01.7504	500Ω	10% 0.5W PMG	
	R38	57.11.4102	1.5kΩ	5% 0.25W CSCH	
	R39	"	4112	1.1kΩ	
	R40	57.11.4102	1kΩ	5% 0.25W CSCH	
	R41	"	"	"	
	R42	57.56.5109	1.2	10% 4W DR	

INDI	DATE	NAME
①		
②		
③	1.10.81	DB - 81
④	15.2.80	DB
⑤	31.1.73	H. Kuro
STUDER STABILIZER 1.180.466-81 PAGE 3 OF 4		

INDI	POS NO	PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MFR
	R43	57.56.5109	1.2	10% 4W DR	
	R44	57.11.4332	3.3kΩ	5% 0.25W CSCH	
	R45	"	4102	1kΩ	
	R46	"	4332	3.3kΩ	
	R47	"	4102	1kΩ	
	R48	"	"	"	
	R49	"	4672	4.7kΩ	
	R50	57.11.4102	1kΩ	5% 0.25W CSCH	
	R51	"	"	"	
	R52	"	"	"	
	R53	"	4224	2.2kΩ	
	R54	"	4222	2.2kΩ	
	R55	"	4472	4.7kΩ	
	R56	"	4102	1kΩ	
	R57	"	"	"	
	R58	"	4672	4.7kΩ	
	R59	"	4833	82kΩ	
	R60	"	"	2% 0.25W MFR	

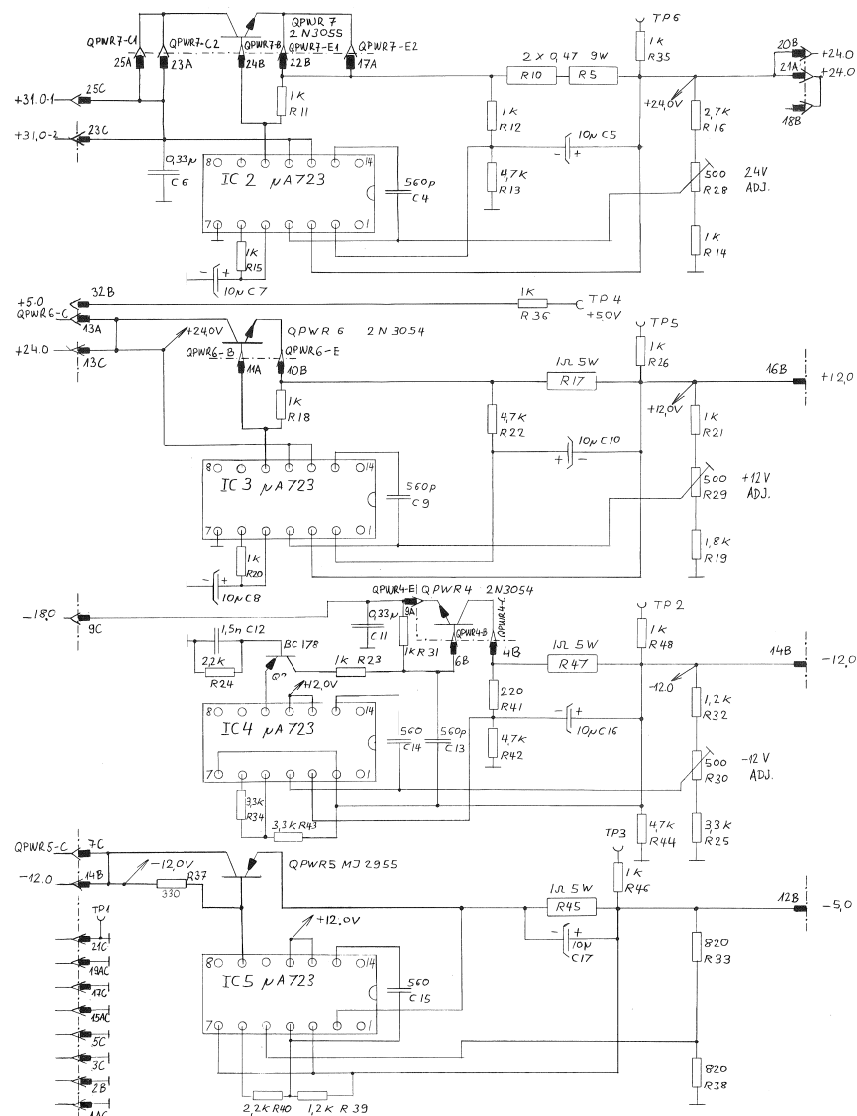
INDI	DATE	NAME
①		
②		
③	1.10.81	DB - 81
④	15.2.80	DB
⑤	31.1.73	H. Kuro
STUDER STABILIZER 1.180.466-81 PAGE 4 OF 4		

STABILIZER PCB 1.180.465 GR30 EL8



TP 1 = 0V
 TP 2 = -12V
 TP 3 = -5V
 TP 4 = +5.2V
 TP 5 = +12V
 TP 6 = +24V
 TP 7 =
 TP 8 =
 TP 9 =
 TP10 =

STABILIZER PCB 1.180.465 GR30 EL8



IND POS NO	PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MFR
C 01				
C 02				
C 03				
C 04	59.32.0561	560 P	500V CER	
C 05	59.36.3100	10 U	16V TA	
C 06	59.31.0334	0,33 U	63V MPETP	
C 07	59.36.3100	10 U	16V TA	
C 08	59.36.3100	10 U		
C 09	59.32.0561	560 P	500V CER	
C 10	59.36.3100	10 U	16V TA	
C 11	59.31.0334	0,33 U	63V MPETP	
C 12	59.32.1152	1,5 M	500V CER	
C 13	59.32.0561	560 P	500V CER	
C 14	59.32.0561	560 P		
C 15	59.32.0561	560 P		
C 16	59.36.3100	10 U	16V TA	
C 17	59.36.3100	10 U		
IC 1				
IC 2	50.05.0115	µA 723	Voltage regulator	P
IC 3	50.05.0115	µA 723		
IC 4	50.05.0115	µA 723		
IC 5	50.05.0115	µA 723		
F 01	54.01.0368	3 x 16	Plug	B
Q 01				
Q 02	50.03.0306	BC 178	FNP	PS
①	DATE	NAME	CER = Ceramic P = Fairchild	
②			TA = Tantalum M = Motorola	
③			MPETP = Met. Polyester B = Burndy	
④				
⑤	14.4.78	E. Schönli/gv		
STUDER	Stabilizer	1.180.465	PAGE 1 OF 3	

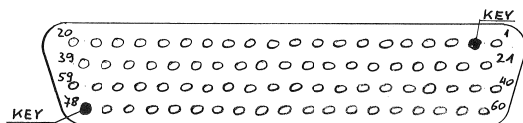
IND POS NO	PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MFR
R 26	57.11.4102	1 k	5% .25W CF	
R 27				
R 28	58.01.7501	500	10% .5 W PCF	
R 29	58.01.7501	500		
R 30	58.01.7501	500		
R 31	57.11.4102	1 k	5% .25W CF	
R 32	57.11.4122	1,2 k		
R 33	57.11.4821	820		
R 34	57.11.4332	3,3 k		
R 35	57.11.4102	1 k		
R 36	57.11.4102	1 k		
R 37	57.11.4331	330		
R 38	57.11.4821	820		
R 39	57.11.4122	1,2 k		
R 40	57.11.4222	2,2 k		
R 41	57.11.4221	220		
R 42	57.11.4472	4,7 k		
R 43	57.11.4332	3,3 k		
R 44	57.11.4472	4,7 k		
R 45	57.56.5109	1	10% 4W	
R 46	57.11.4102	1 k	5% .25W CF	
R 47	57.56.5109	1	10% 4W	
R 48	57.11.4102	1 k	5% .25W CF	
TP1-10	54.01.0307	10 TP	CIS	AMP
①	DATE	NAME	CF = Carbon Film	
②			PCF= P'meter Carbon-Film	
③				
④				
⑤	14.4.78	E. Schönli/gv		
STUDER	Stabilizer	1.180.465	PAGE 3 OF 3	

IND POS NO	PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MFR
Q 03				
Q 04				
Q 05	50.03.0481	MJ 2955	Power	FNP
R 01				
R 02				
R 03				
R 04				
R 05	57.99.0186	0,47	10% 9W	
R 06				
R 07				
R 08				
R 09				
R 10	57.99.0186	0,47	10% 9W	
R 11	57.11.4102	1 k	5% .25W CF	
R 12	57.11.4102	1 k		
R 13	57.11.4472	4,7 k		
R 14	57.11.4102	1 k		
R 15	57.11.4102	1 k		
R 16	57.11.4272	2,7 k		
R 17	57.56.5109	1	10% 4W	
R 18	57.11.4102	1 k	5% .25W CF	
R 19	57.11.4182	1,8 k		
R 20	57.11.4102	1 k		
R 21	57.11.4102	1 k		
R 22	57.11.4472	4,7 k		
R 23	57.11.4102	1 k		
R 24	57.11.4222	2,2 k		
R 25	57.11.4332	3,3 k		
①	DATE	NAME	CF = Carbon Film	
②			M = Motorola	
③				
④				
⑤	14.4.78	E. Schönli/gv		
STUDER	Stabilizer	1.180.465	PAGE 2 OF 3	

TAPE DECK REMOTE CONTROL CONNECTOR GR31

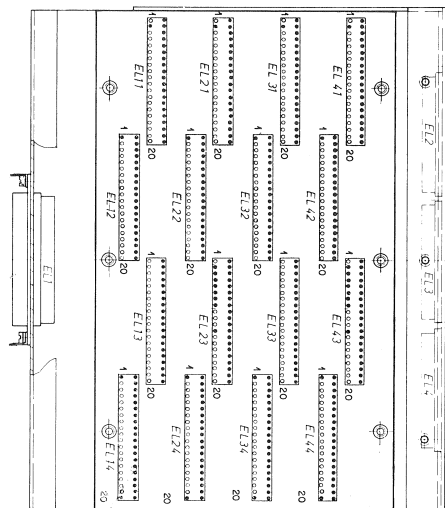
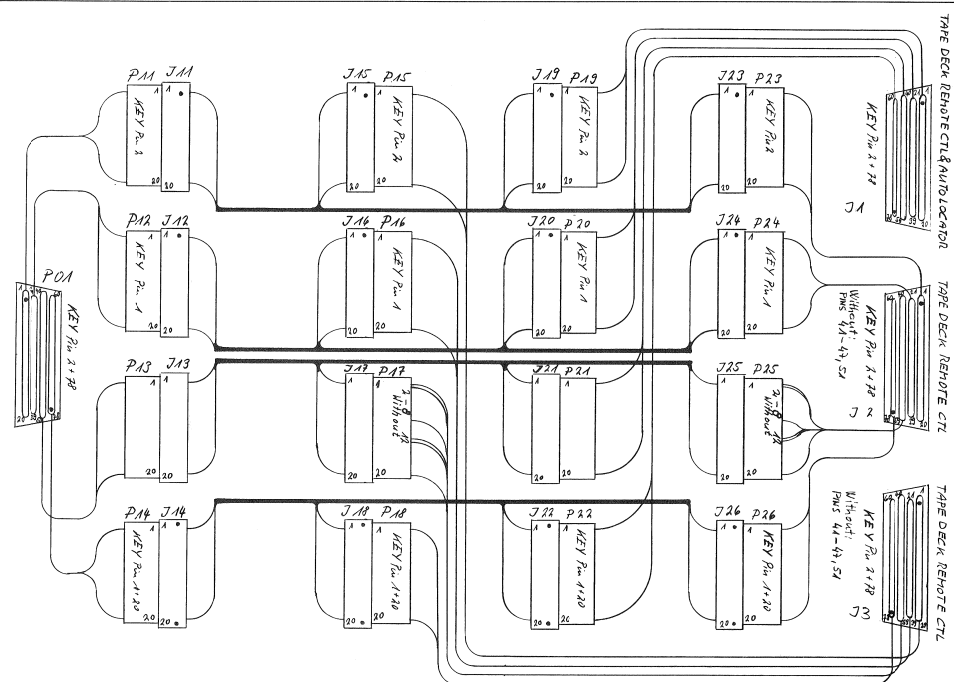
ADDITIONAL TAPE DECK REMOTE CONTROL CONNECTOR UNIT 1.180.090

PT	SIG. NAME	COLOR	PT	SIG. NAME	COLOR
1	+O.O	blk	40		
2	KEY		41	Y-DSP-E	grn
3	S-REW	red	42	Y-DSP-F	blu
4	S-FORW	org	43	Y-DSP-G	vio
5	S-REPR	yel	44	Y-DSP-H	gry
6	S-STOP	brn	45	Y-KEYB-1	brn
7	S-REC	grn	46	Y-KEYB-2	red
8	S-CUT	blu	47	Y-KEYB-3	org
9	REM. ENB	grn	(48	Y-REFEXT)	grn
10	B-REW	red	(49	Y2-TRSP-R)	blu
11	B-FORW	org	(50	Y-MUCLK2)	vio
12	B-REPR	yel	51	B-LOCACT	brn
13	B-STOP	brn	(52	Y-MVCLK1)	gry
14	B-REC	grn	(53	Y-IDIR-R)	wht
15	B-CUT	blu	(54	S-MUTE-R)	vio
(16	S-KCUT)	red	55	CRAZCAN	red
17	FAD-1	gry	56	Y-REHEAR	grn
18	FAD-2	wht	57	B-REHEAR	grn
19	B-FAD	brn	58	B-PERCT	wht
20	+24.O	red	59	-5.O	blu
21	Y-DSP-A	brn	60	+O.O	blk
22	Y-DSP-B	red	61	S-ADDLOC	brn
23	Y-DSP-C	org	62	S-SETADD	red
24	Y-DSP-D	yel	63	S-SETTMR	org
25	Y-DSP-D0	grn	64	S-DWNSLW	yel
26	Y-DSP-D1	blu	65	S-DWNFST	grn
27	Y-DSP-D2	vio	66	S-UPSLW	blu
28	Y-DSP-D3	gry	67	S-UPFST	vio
29	S-RESET	brn	68	S-SETVSP	gry
30	S-ZLOC	vio	69	S-VARISP	wht
31	B-ZLOC	wht	70	S-HTONE	brn
(32	S-REFSEL)	yel	71	B-ADDLOC	red
33	+5.O	grn	72	B-SETADD	org
34	+5.O	grn	73	B-SETTMR	yel
35	+5.O	grn	74	B-SETVSP	grn
36	+O.O	blk	75	B-VARISP	blu
37	+O.O	blk	76	B-SYNC	vio
38	+O.O	blk	77	B-HTONE	gry
39	+5.O	grn	78	KEY	

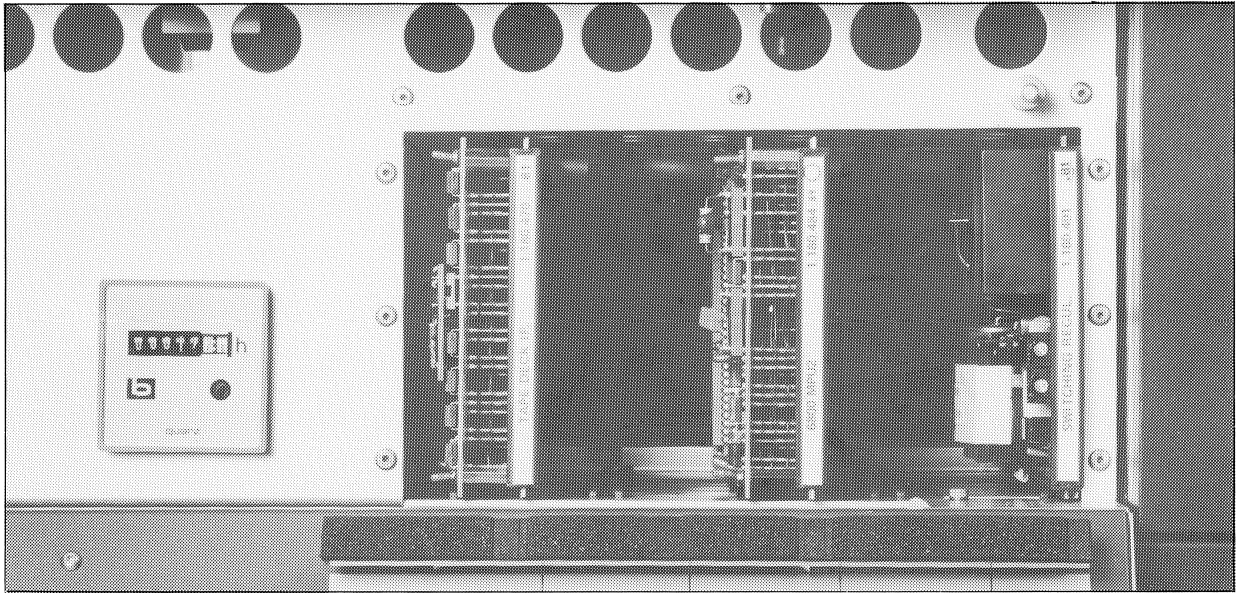


SIGNAL FOLLOW REMOTE CONTROL
SEE SECTION 6/9

() = OPTION 1.180.098.00

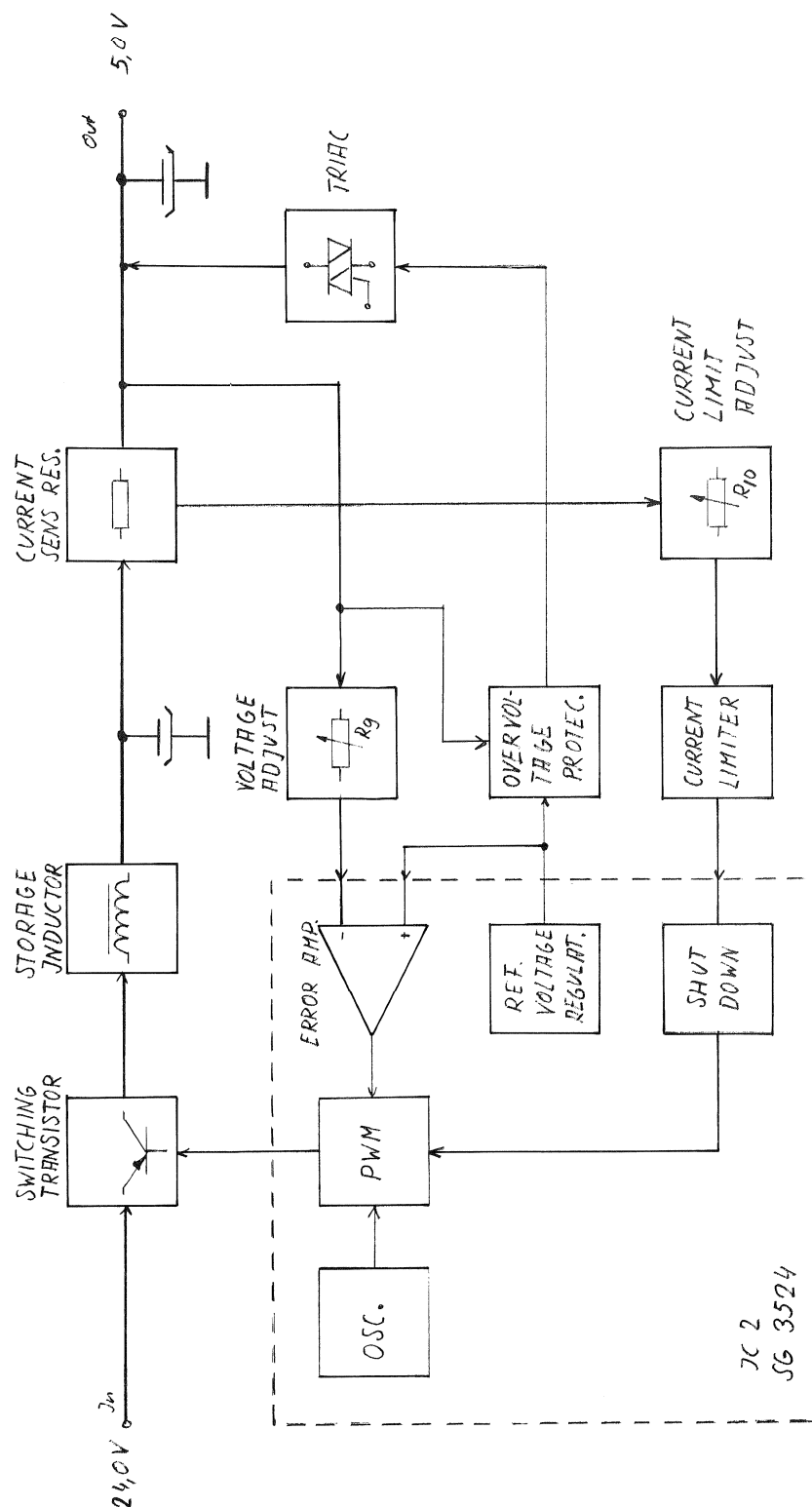


PROCESSOR UNIT / CARD CHASSIS 1.180.405 GR35

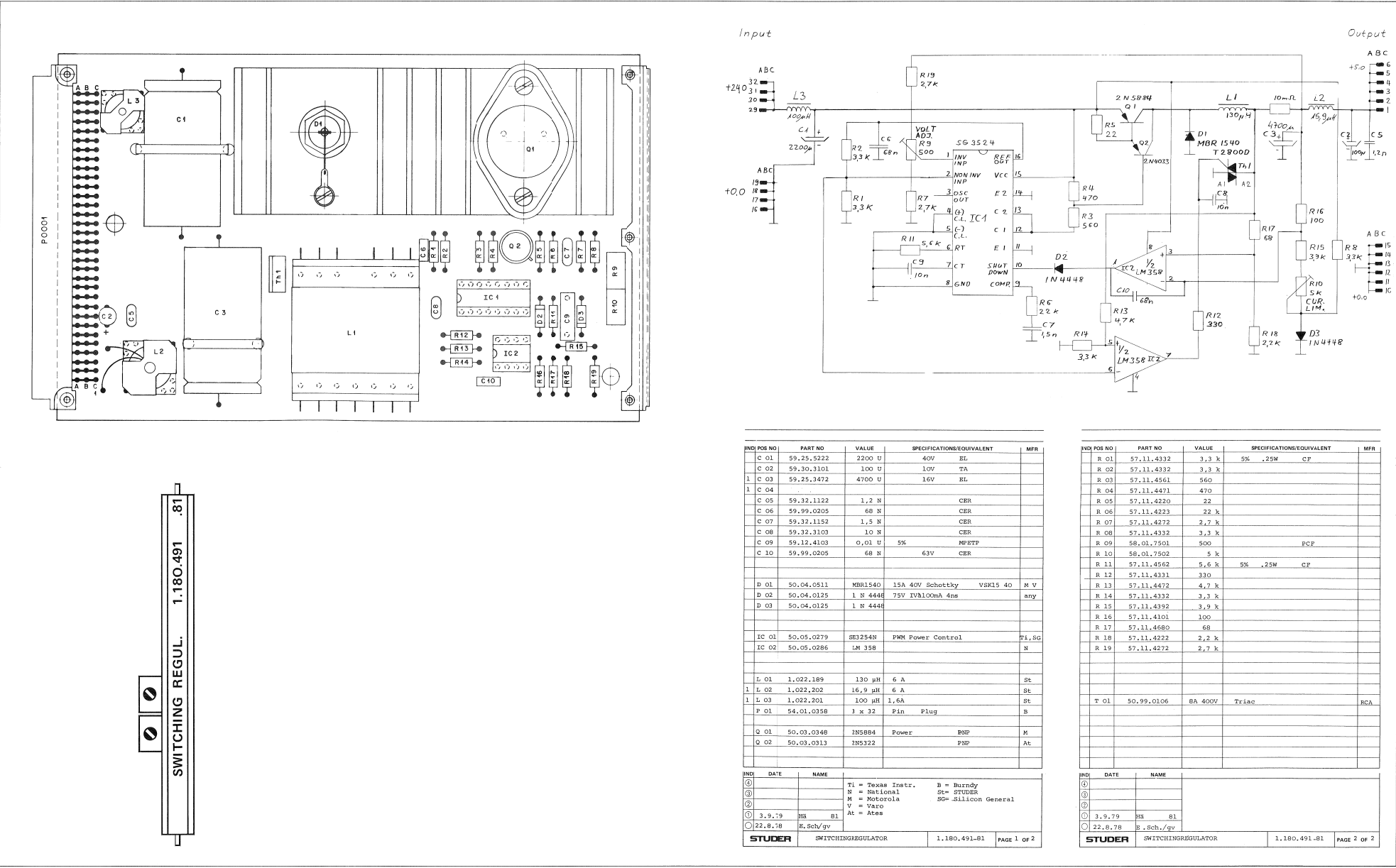


Tape Deck Interface 1.180.470-81/-83 1.180.472-00	Autolocator Interface 1.180.475-84	6800 MPU 2 1.180.482-85 1.180.484-87	Remote Expansion Card 1.180.486-00 R10 Cur. Lim. R9 Volt. Adj.	SW Regulator 1.180.491-81
EL 5	EL 4	EL 3	EL 2	EL 1

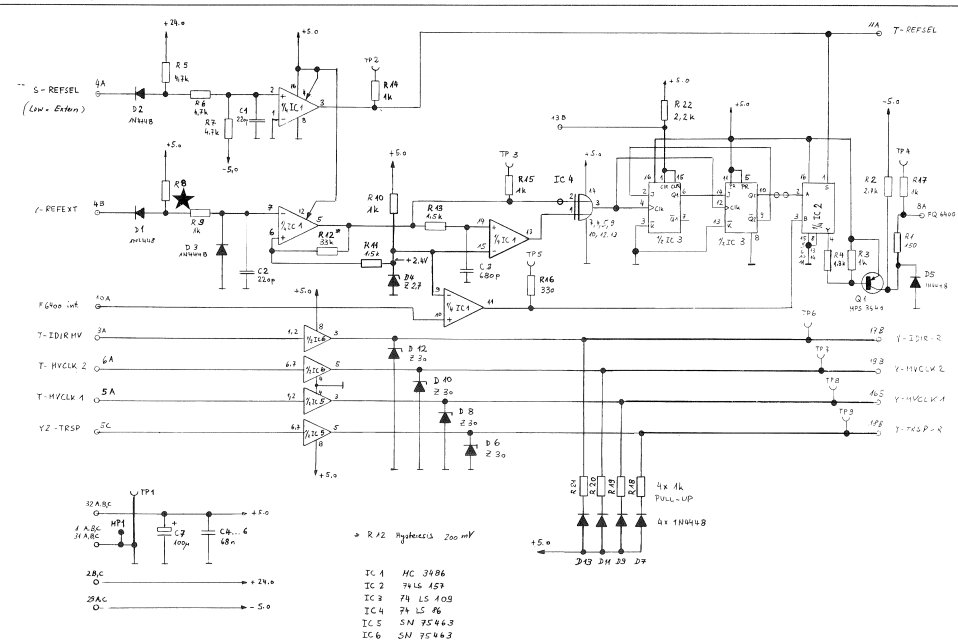
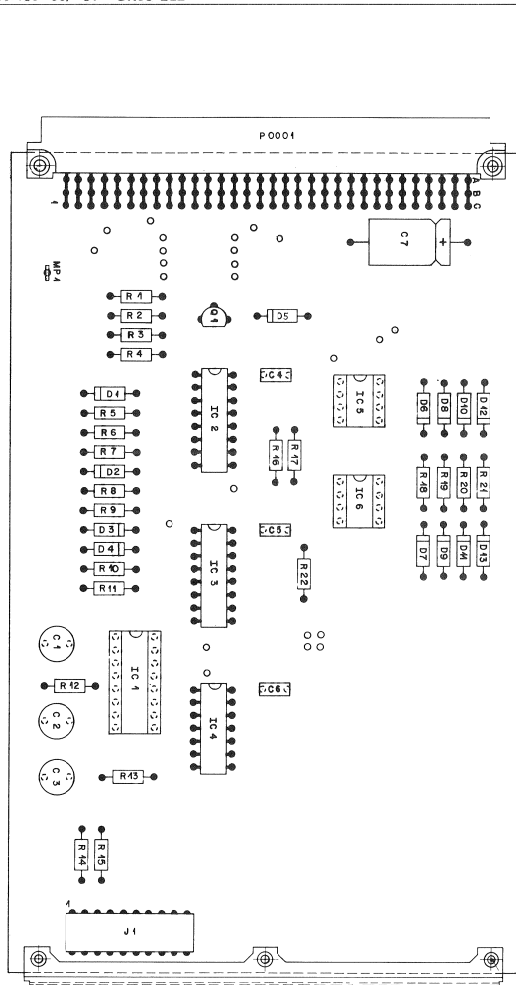
SWITCHING REGULATOR PCB 1.180.491-81 GR35 EL1



SWITCHING REGULATOR PCB 1.180.491-81 GR35 EL1



REMOTE EXPANSION PCB 1.180.486-00/-81 GR35 EL2



IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.	IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
C.....1	59-05-1221	220 pF	18x30V	PP		R.....1	57-11-4191	150 Ohm	2k		
C.....2	59-05-1221	220 pF	18x30V	PP		R.....2	57-11-4172	2.7 kOhm	2k		
C.....3	59-05-1681	880 pF	18x30V	PP		R.....3	57-11-4102	1.0 kOhm	2k		
C.....4	59-99-0205	68 nF	20% 63V	Cor		R.....4	57-11-4182	1.0 kOhm	2k		
C.....5	59-99-0205	68 nF	20% 63V	Cor		R.....5	57-11-4472	6.7 kOhm	2k		
C.....6	59-99-0205	68 nF	20% 63V	Cor		R.....6	57-11-4472	6.7 kOhm	2k		
C.....7	59-25-3101	100 uF	10% 16V	EI		R.....7	57-11-4472	6.7 kOhm	2k		
D.....1	50-04-0125	1N4448	SI			R.....8	57-11-4102	1.0 kOhm	2k		
D.....2	50-04-0125	1N4448	SI			R.....9	57-11-4102	1.0 kOhm	2k		
D.....3	50-04-0125	1N4448	SI			R.....10	57-11-4102	1.0 kOhm	2k		
D.....4	50-04-0125	1N4448	SI			R.....11	57-11-4152	1.5 kOhm	2k		
D.....5	50-04-0125	1N4448	SI			R.....12	57-11-4152	1.5 kOhm	2k		
D.....6	50-04-0125	1N4448	SI			R.....13	57-11-4152	1.5 kOhm	2k		
D.....7	50-04-0125	1N4448	SI			R.....14	57-11-4102	1.0 kOhm	2k		
D.....8	50-04-0125	1N4448	SI			R.....15	57-11-4102	1.0 kOhm	2k		
D.....9	50-04-0125	1N4448	SI			R.....16	57-11-4152	1.5 kOhm	2k		
D.....10	50-04-0125	1N4448	SI			R.....17	57-11-4102	1.0 kOhm	2k		
D.....11	50-04-0125	1N4448	SI			R.....18	57-11-4102	1.0 kOhm	2k		
D.....12	50-04-0125	1N4448	SI			R.....19	57-11-4102	1.0 kOhm	2k		
D.....13	50-04-0125	1N4448	SI			R.....20	57-11-4102	1.0 kOhm	2k		
IC.....1	50-15-0104	MC 3486P	DS 3486	1 FACE	TTL	R.....21	57-11-4102	1.0 kOhm	2k		
IC.....2	50-06-0157	SN 74 LS 157 N	SN 74 LS 157 N		TTL						
IC.....3	50-06-0109	SN 74 LS 109 N	SN 74 LS 109 N		TTL						
IC.....4	50-06-0186	SN 74 LS 86 N	SN 74 LS 86 N		TTL						
IC.....5	50-05-0203	SN 75463P	DS 3613 N	DRIV							
IC.....6	50-05-0203	SN 75463P	DS 3613 N	DRIV							
J.....1	54-01-0307	LSCONTACT	COMMERCIAL INTERCONNECTION SYSTEM								
P.....1	54-01-0358	LEISTE	3 x 32 EURO PRINT								
MP.....1	29-21-0002	LEIOTSE									
Q.....1	50-03-0489	MPS 3640	PNP								

Cer= Ceramic; El= Electrolytic; PP= Polypropylon

ORIG 85/01/25

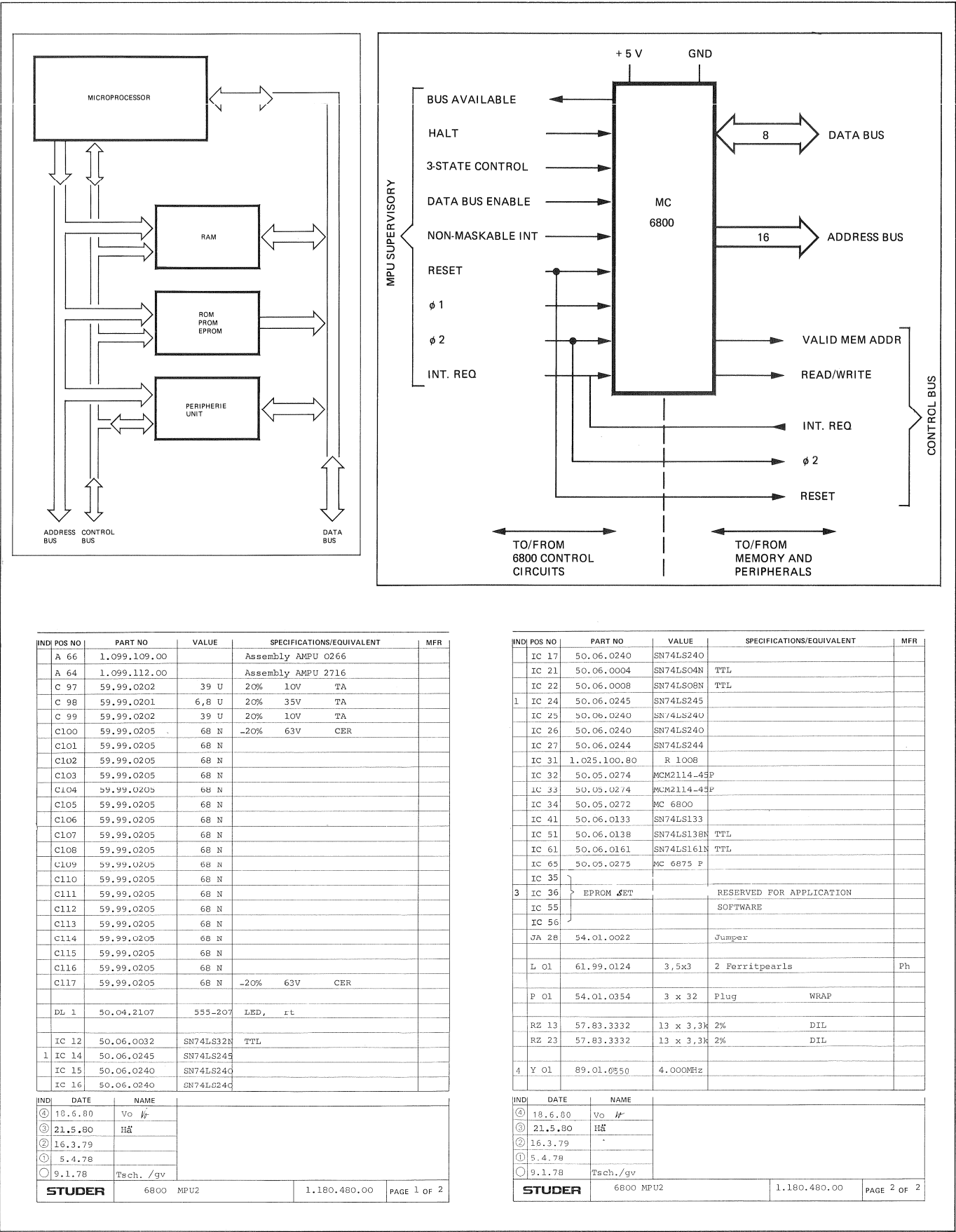
STUDER [00] 85/01/25 CK REMOTE EXPANSION CARD 1.180.486-81 PAGE 1

STUDER [00] 85/01/25 CK REMOTE EXPANSION CARD 1.180.486-81 PAGE 2

NOTE : ONLY WORKS TOGETHER WITH TAPE DECK INTERFACE
1.180.472-30 AND IF MACHINE IS PREWIRED (SN 20334)

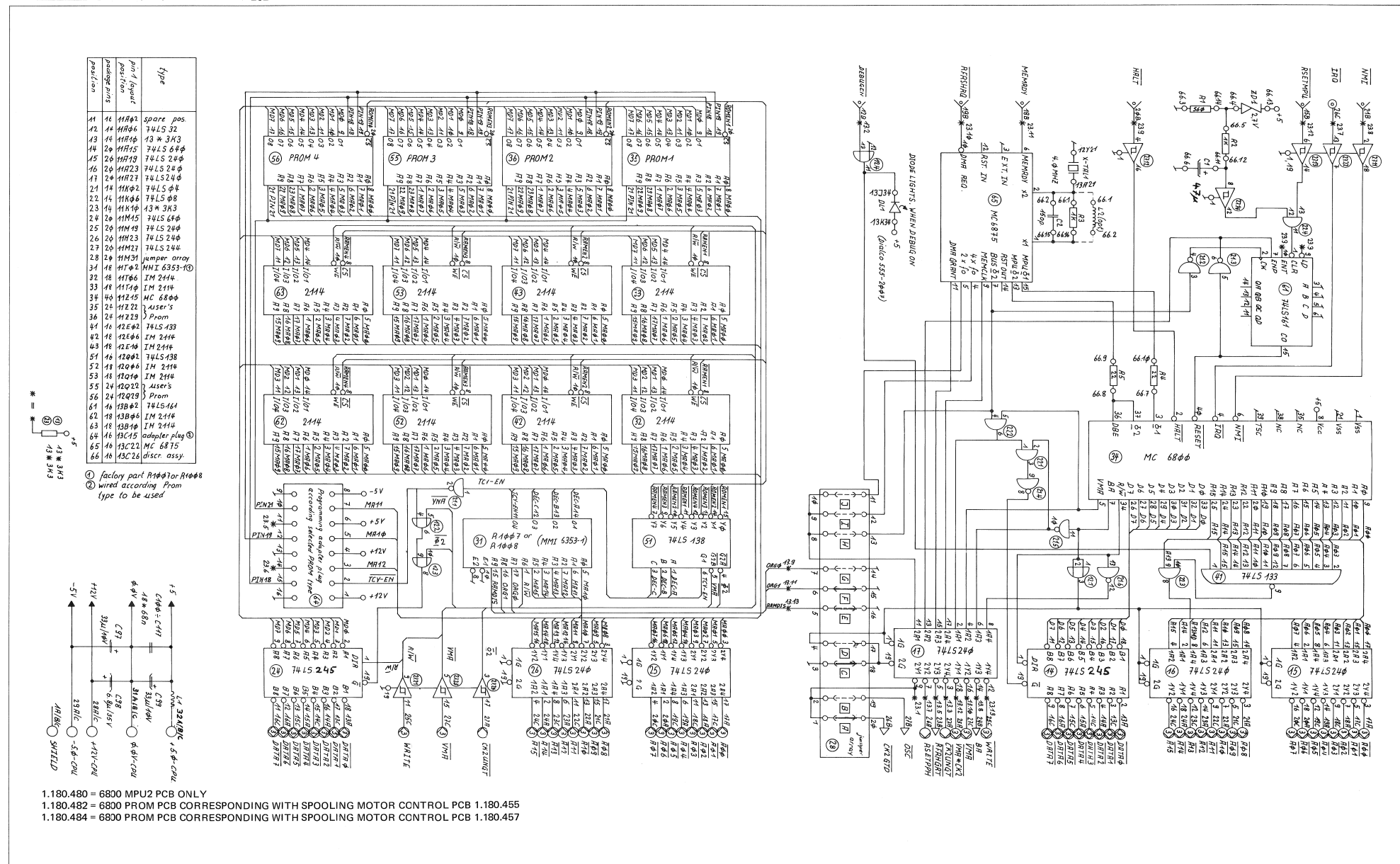
★ For 1.180.486-00: R8 = 3,3k (57.11.4332)
For 1.180.486-81: R8 = 1k (57.11.4102)

6800 MPU 2 PCB 1.180.480/482/484 GR35 EL3 "ESE"



[illegible]

18.06.80



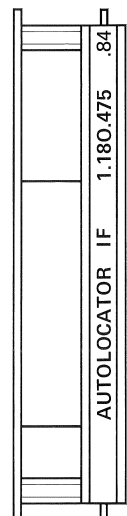
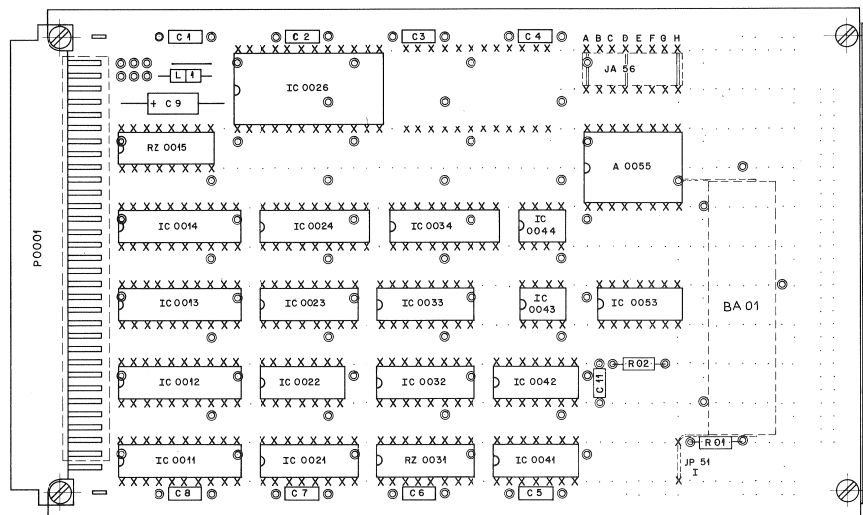
Technical drawing of a rectangular plate with dimensions and assembly details:

- Dimensions:**
 - Width: $0,6''$
 - Height: $7 * 0,1''$
- Assembly Details:**
 - Top edge: $C 68 n$
 - Bottom edge: $59.99.0205$
 - Assembly label: **ASSEMBLY AMPU 2716 1.099.112**
- Other Labels:**
 - Top left corner: 16
 - Bottom left corner: 8
 - Bottom right corner: 9

IND	DATE	NAME			
①					
②	29.5.83	LD			
③	18.2.1980	Ho. LD			
④	5.4.78				
⑤	9.1.78	Tsch./gv			
STUDER			ASSEMBLY	AMPU 0266	1.099.109,00
					PAGE 1 OF 1

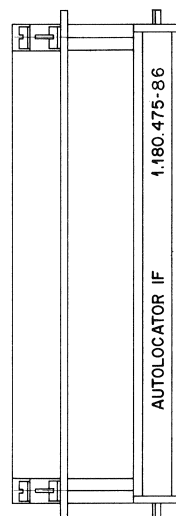
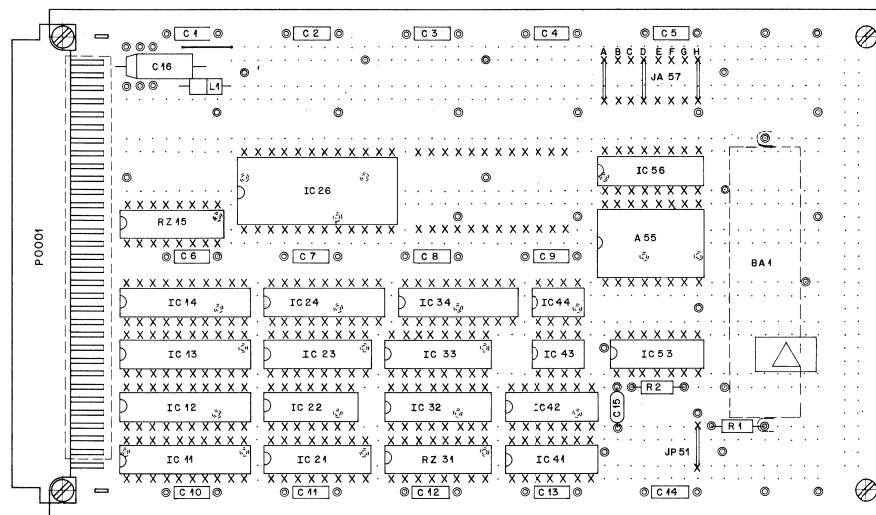
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AUTOLOCATOR INTERFACE PCB 1.180.475-84/-86 GR35 EL4



IND POS NO	PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MFR	
1	A55	A.133.114.80	ASSEMBLY		
2	CM13	57.39.0205	18 W 20%, 12V, KER		
3	CM9	57.39.0201	39 W 20%, 12V, TA		
4	CM1	57.34.4221	220 W 20%, 12V, KER		
5	RM1	57.11.4101	100 m 5%, 15 W, CSCH		
6	RM2	57.11.4111	180 m 5%, 15 W, CSCH		
7	ICM1	50.05.0215	74LS245 BUS TRANSCEIVER TTL		
8	ICM2	50.06.0240	74LS240 BUFFER		
9	ICM3	50.06.0240	74LS240 BUFFER		
10	ICM4	50.06.0374	74LS324 OCTAL D-FF		
11	ICM11	50.05.0263	DM243A COMPARATOR		
12	ICM21	50.06.0044	74LS14 HEX INVERTERS		
13	ICM31	50.06.0167	74LS47 DATA SELECTOR		
14	ICM4	50.14.0103	HMS-1511-5 15 x 4 RAM CMOS	H,15	
15	ICM16	A.015.016.71	ROM16-4 EPROM		
16	ICM32	A.015.016.11	RAM16-4 PROM		
17	ICM33	50.05.0271	74LS483 10 x 4 RAM TTL		
18	ICM34	50.14.0103	HMS-1511-5 15 x 4 RAM CMOS	H,15	
19	ICM36	-	not used		
20	ICM44	50.06.0074	74LS79 DUAL D-FF TTL		
21	ICM42	50.06.0010	74LS70 4-IMP. NAND GATES		
22	ICM43	50.05.0203	75463 DUAL POSITIV-OR DRIVER		
23	ICM44	50.05.0203	75463 DUAL POSITIV-OR DRIVER		
24	ICM53	50.06.0044	74LS14 HEX INVERTERS		
25	RM45	57.28.3332	8 x 332n 1% 1/4 W		
26	RM234	57.25.3222	15 x 2.2k 1% 1/4 W		
BA01 89.01.0272 AKKU NICD 3,6V					
P01 54.01.0154 LEISTE 3 x 32 Pol WRAP					
IND	DATE	NAME	IND	DATE	NAME
1	10.3.80	LE-83	1	10.3.80	LE-83
2	10.4.79	LE	2	10.4.79	LE
3	21.6.79	LE-82	3	21.6.79	LE-82
4	21.6.79	LE-81	4	21.6.79	LE-81
5	27.02.79	W	5	27.02.79	W
STUDER AUTOLOCATOR IF A800 A.180.475.84 PAGE 1 OF 1					

AUTOLOCATOR INTERFACE PCB 1.180.475-86 GR35 EL4



IND POS NO	PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MFR	
A55	A.133.114.80		ASSEMBLY		
CM13	57.39.0205	18 wF	20%, 13V, KER		
CM9	57.39.0201	39 wF	20%, 12V, TA		
CM1	57.34.4221	220 wF	15V, KER		
RM1	57.11.4101	100 n	5%, 15W, CSCH		
RM2	57.11.4111	180 n	5%, 15 W, CSCH		
ICM1	50.05.0215	74LS245	BUS TRANSCEIVER TTL		
ICM2	50.06.0240	74LS240	BUFFER		
ICM3	50.06.0240	74LS240	BUFFER		
ICM4	50.06.0374	74LS324	OCTAL D-FF		
ICM11	50.05.0263	DM243A	COMPARATOR		
ICM21	50.06.0044	74LS14	HEX INVERTERS		
ICM31	50.06.0167	74LS47	DATA SELECTOR		
ICM4	50.14.0103	HMS-1511-5	15 x 4 RAM CMOS	H,15	
ICM16	A.015.016.71	ROM16-4	EPROM		
ICM32	A.015.016.11	RAM16-4	PROM		
ICM33	50.05.0271	74LS483	10 x 4 RAM TTL		
ICM34	50.14.0103	HMS-1511-5	15 x 4 RAM CMOS	H,15	
ICM44	50.06.0074	74LS79	DUAL D-FF TTL		
ICM42	50.06.0010	74LS70	4-IMP. NAND GATES		
ICM43	50.05.0203	75463	DUAL POSITIV-OR DRIVER		
ICM44	50.05.0203	75463	DUAL POSITIV-OR DRIVER		
ICM53	50.06.0044	74LS14	HEX INVERTERS		
RM45	57.28.3332	8 x 332n	1%, 1/4 W		
RM234	57.25.3222	15 x 2.2k	1%, 1/4 W		
RM56	50.15.0105	MC5406P	LINE DRIVER		
RM1	57.01.0272		RECU, 1100, 3,6V 100mAh		
P01 54.01.0154				LEISTE 3 x 32 Pol WRAP	
IND	DATE	NAME	IND	DATE	NAME
1	10.3.80	LE	1	10.3.80	LE
2	10.4.79	LE	2	10.4.79	LE
3	21.6.79	LE	3	21.6.79	LE
4	21.6.79	LE	4	21.6.79	LE
5	27.02.79	W	5	27.02.79	W
STUDER AUTOLOCATOR IF A800 A.180.475.86 PAGE 1 OF 1					

★ Has been modified

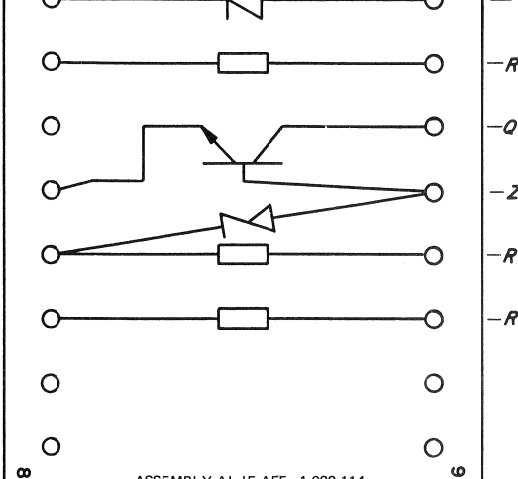


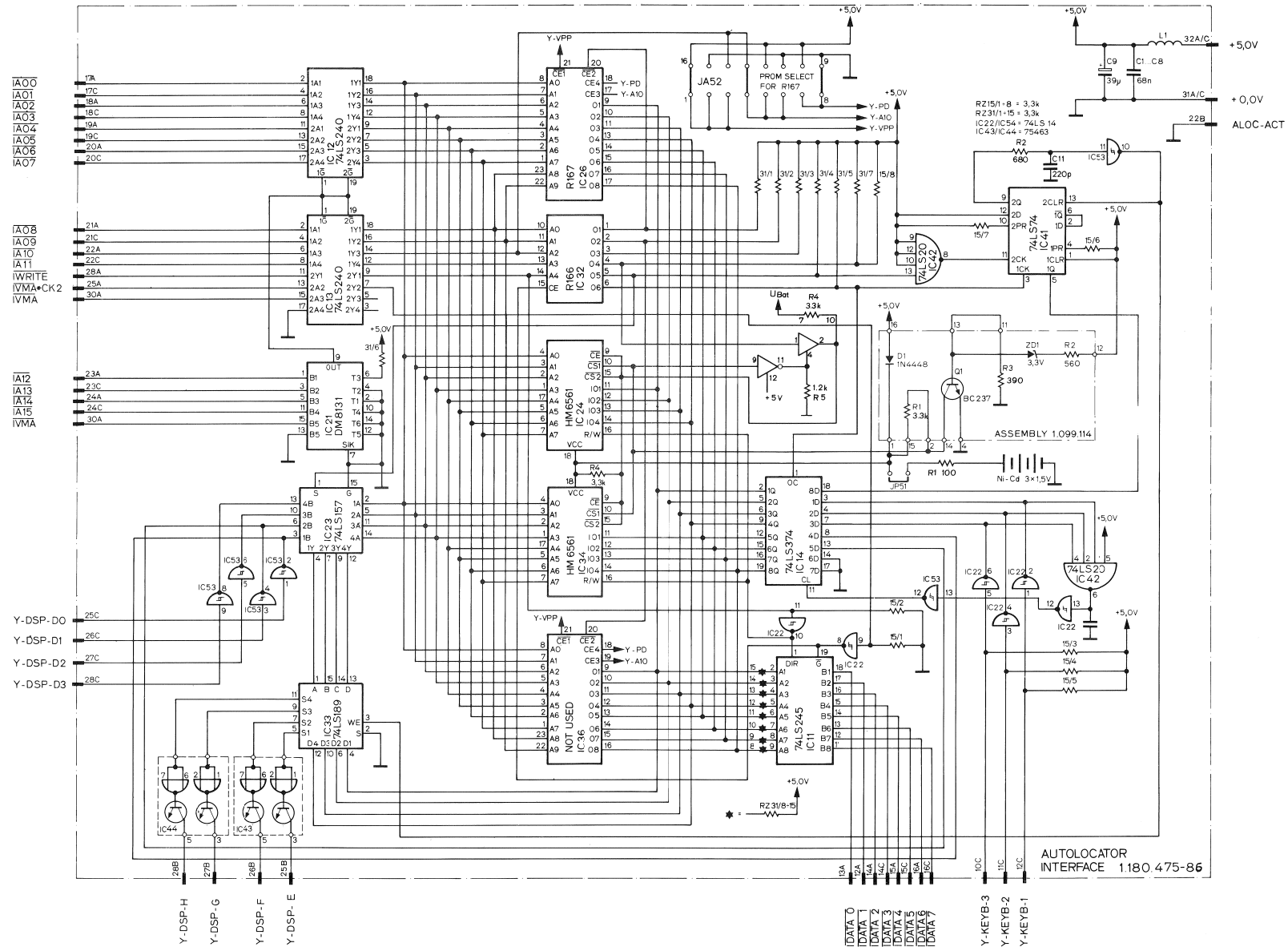
Diagram of a 7*Q,1" assembly. The diagram shows a rectangular assembly with 7 rows and 1 column of components. The components are labeled on the right side: D 0001, R 0001, Q 0001, ZD 1, R 0002, R 0003, and 6. The assembly is labeled 7*Q,1" on the left. The bottom of the assembly is labeled 0,6". The assembly is labeled ASSEMBLY AL IF A55 1.099.114 at the bottom.

[illegible]

IND	DATE	NAME	
④			
③			
②			
①			
○	13.8.80	GP	

STUDER	ASSEMBLY AL-IF ATT	1.099.114	PAGE	OF
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AUTOLOCATOR INTERFACE PCB 1.180.475-85/-86 GR35 EL4

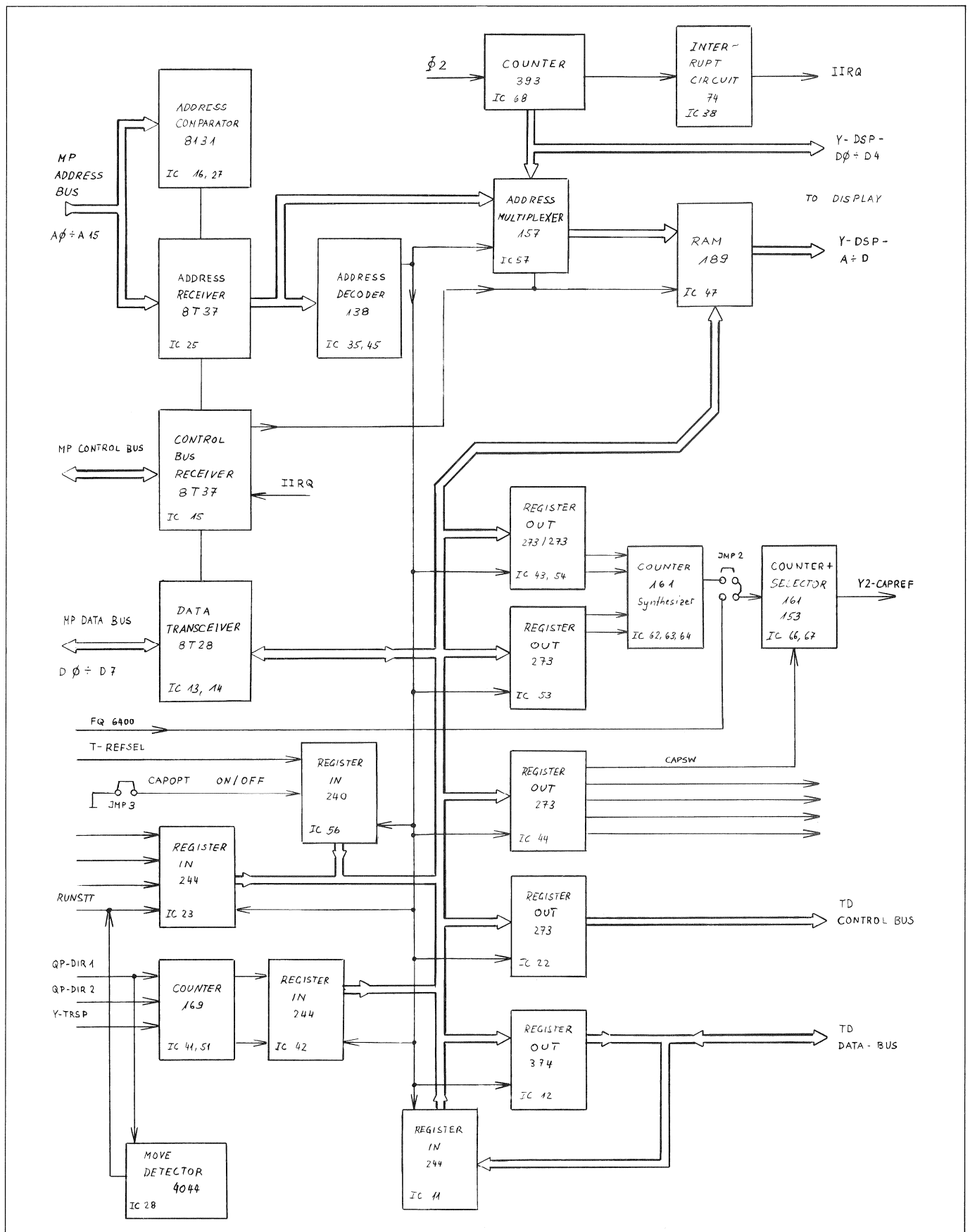


0,6"

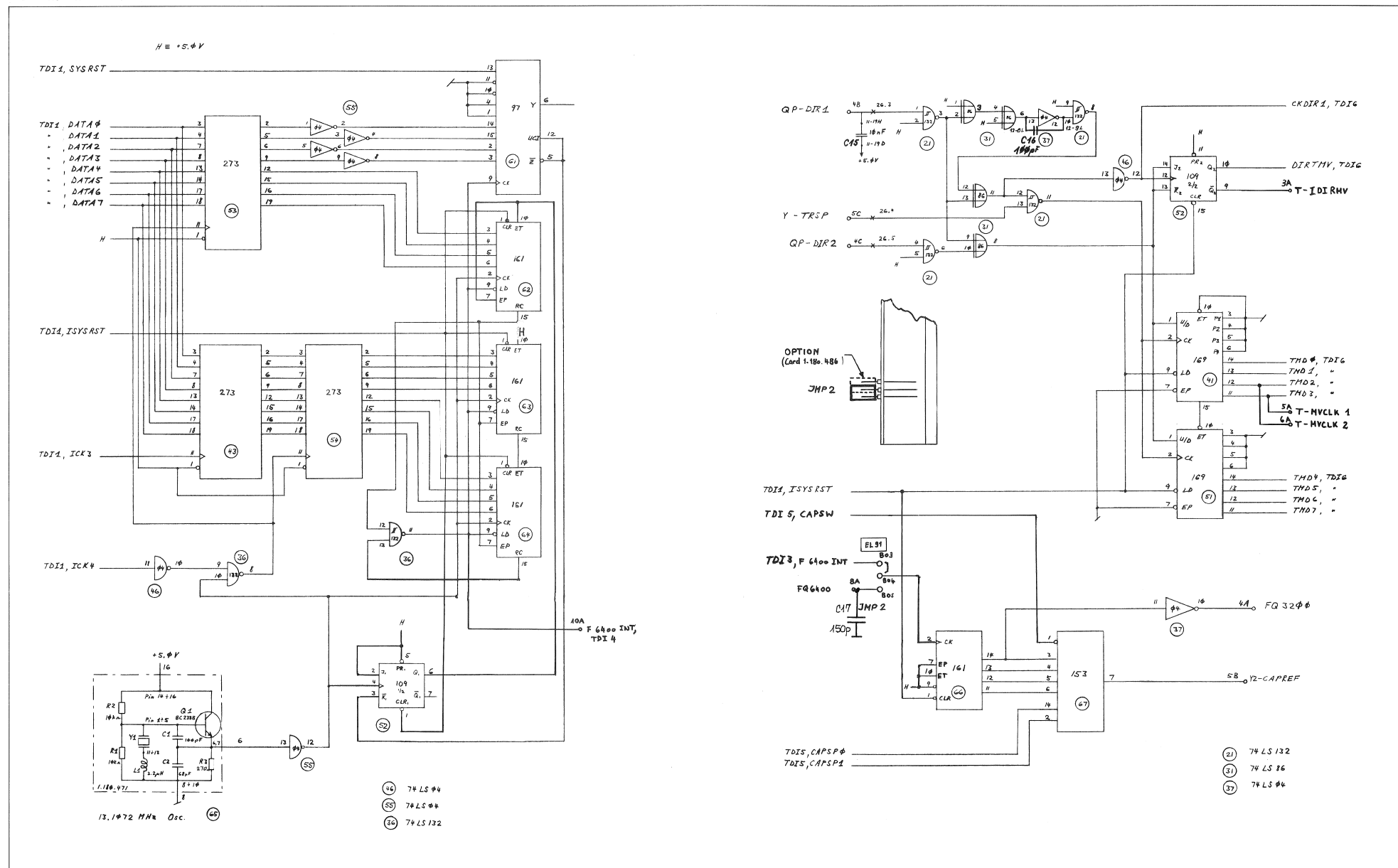
REV	POS NO	PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MFR
	301	50.00.0121	144448		31
	E01	57.11.0532	3.32	5%, 0.25W, 1/4W	
	E02	57.11.0561	560.0	5%, 0.25W, 1/4W	
	E03	57.11.0391	390.0	5%, 0.25W, 1/4W	
	Q01	50.05.0856	RC2323	39 5723	N/M
	Z001	50.04.1109	3.34	5%, 0.02, 2, 1/4W	
	E04	57.14.0332	3.32	5%, 0.25W, 1/4W	
	E05	57.14.0122	1.22	5%, 0.25W, 1/4W	

IND	DATE	NAME	
④			
③			
②			
①			
☐ 2.5.85		<i>W</i>	
STUDER	ASSEMBLY AL-IF ATT	1.099.114-81	PAGE / OF

TAPE DECK INTERFACE PCB 1.180.472-00 GR35 EL5



TAPE DECK INTERFACE PCB 1.180.472-00 GR35 EL5



TAPE DECK INTERFACE PCB 1.180.472-00 GR35 EL5

OSCILLATOR PCB / 13 MHz 1.180.471

IND	POS NO	PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MFR
C 1	32	59.99.0205	68 N	-20% 63V CER	
C 13		59.99.0202	39 N	20% 10V TA	
C 14		59.34.4271	270 P	5% N750 CER	
C 15		59.32.3103	10 N	+80% 40V CER	
C 16		59.34.4101	100 P	5% N750 CER	
C 17		52.34.2151	150 P	2% N150 CER	
C 18		59.32.3103	10 N	+80% 40V CER	
IC 11		50.06.0244	SN 74 LS	244N, TTL-3	
IC 12		50.06.0374	SN 74 LS	374 Octal-D-Flip	
IC 13		50.05.0260	NBT28AN	TTL-3	MC8T28A-P
IC 14		50.05.0260	NBT28AN		
IC 15		50.05.0217	NBT378	TTL	
IC 16		50.05.0263	DMB131N	TTL	
IC 21		50.06.0132	SN 74 LS	132N, TTL	
IC 22		50.06.0273	SN 74 LS	273 8-Bit D-Flip	
IC 23		50.06.0244	SN 74 LS	244N, TTL-3	
IC 24		50.06.0139	SN 74 LS	139N, TTL	
IC 25		50.05.0217	NBT378	TTL	
IC 27		50.05.0263	DMB131N	TTL	
IC 28		50.05.0149	MC 4044	TTL	
IC 31		50.06.0086	SN 74 LS	86N, TTL	
IC 34		50.05.0204	SN 75464N	Driver	DS 36:4 N
IC 35		50.06.0138	SN 74 LS	138N, TTL	
IC 36		50.06.0132	SN 74 LS	132N, TTL	
IC 37		50.05.0109	SN 7404-N	TTL	7404-FC
IC 38		50.06.0074	SN 74 LS	74N, TTL	
IND	DATE	NAME	IND	DATE	NAME
④			⑤		
⑤			⑥		
⑥			⑦		
⑦	7.9.82	/vg1	⑧		
⑧	2.6.82	HB/gv	⑨		
STUDER	TAPE DECK IF PC CARD	PL	1.180.472	PAGE 1 OF 3	
IND	POS NO	PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MFR
IC 41		50.06.0169	SN 74 LS	169N, TTL	
IC 42		50.06.0244	SN 74 LS	244N, TTL-3	
IC 43		50.06.0273	SN 74 LS	273 8-Bit D-Flip	
IC 44		50.06.0273	SN 74 LS	273	
IC 45		50.06.0138	SN 74 LS	138N, TTL	
IC 46		50.06.0004	SN 74 LS	04N, TTL	
IC 47		50.05.0271	DM74S1B9N	RAM	SN74S1B9N
IC 48		50.06.0109	SN 74 LS	109N, TTL	
IC 51		50.06.0169	SN 74 LS	169N, TTL	
IC 52		50.06.0109	SN 74 LS	109N, TTL	
IC 53		50.06.0273	SN 74 LS	273 8-Bit D-Flip	
IC 54		50.06.0273	SN 74 LS	273	
IC 55		50.06.0004	SN 74 LS	04N, TTL	
IC 56		50.06.0240	SN 74 LS	240 8-Bit D-Flip	
IC 57		50.06.0157	SN 74 LS	157N, TTL	
IC 58		50.06.0393	SN 74 LS	393N, TTL	
IC 61		50.05.0209	SN 7497N	TTL	
IC 62		50.06.0161	SN 74 LS	161N, TTL	
IC 63		50.06.0161	SN 74 LS	161N,	
IC 64		50.06.0161	SN 74 LS	161N,	
IC 65		1.180.471.00		Oscillator	
IC 66		50.06.0161	SN 74 LS	161N, TTL	
IC 67		50.06.0153	SN 74 LS	153N, TTL	
IC 68		50.06.0393	SN 74 LS	393N, TTL	
JMP 1		54.01.0022		Jumper	
JMP 2		54.01.0021		Jumper	
JMP 3		54.01.0021		Jumper	
IND	DATE	NAME	IND	DATE	NAME
④			⑤		
⑤			⑥		
⑥			⑦		
⑦	7.9.82	/vg1	⑧		
⑧	2.6.82	HB/gv	⑨		
STUDER	TAPE DECK IF PC CARD	PL	1.180.472	PAGE 2 OF 3	

IND	POS NO	PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MFR
L 01		61.99.0124	3,5 x 3	2 Perit heads	Ph
P 01		54.01.0354	3 x 32	Plug WRAP	
R2 26		57.85.3332	1% x3,3k		DIL 16
1 R 01		57.11.4392	3,9 k	5% .25W	CP
IND	DATE	NAME	IND	DATE	NAME
④			⑤		
⑤			⑥		
⑥			⑦		
⑦	7.9.82	/vg1	⑧		
⑧	2.6.82	HB/gv	⑨		
STUDER	TAPE DECK IF PC CARD	PL	1.180.472	PAGE 3 OF 3	

Interconnection wiring

Version:	1.180.471-11	1.180.471-12
Pt.		
A	14 + 16	14 + 16
B	8 + 10	1 + 3, 8 + 12
C	11 + 13	4
D	1 + 5	5, 13

IND	DATE	NAME
④		
⑤		
⑥		
⑦		
⑧	1.3.79	HB/gv

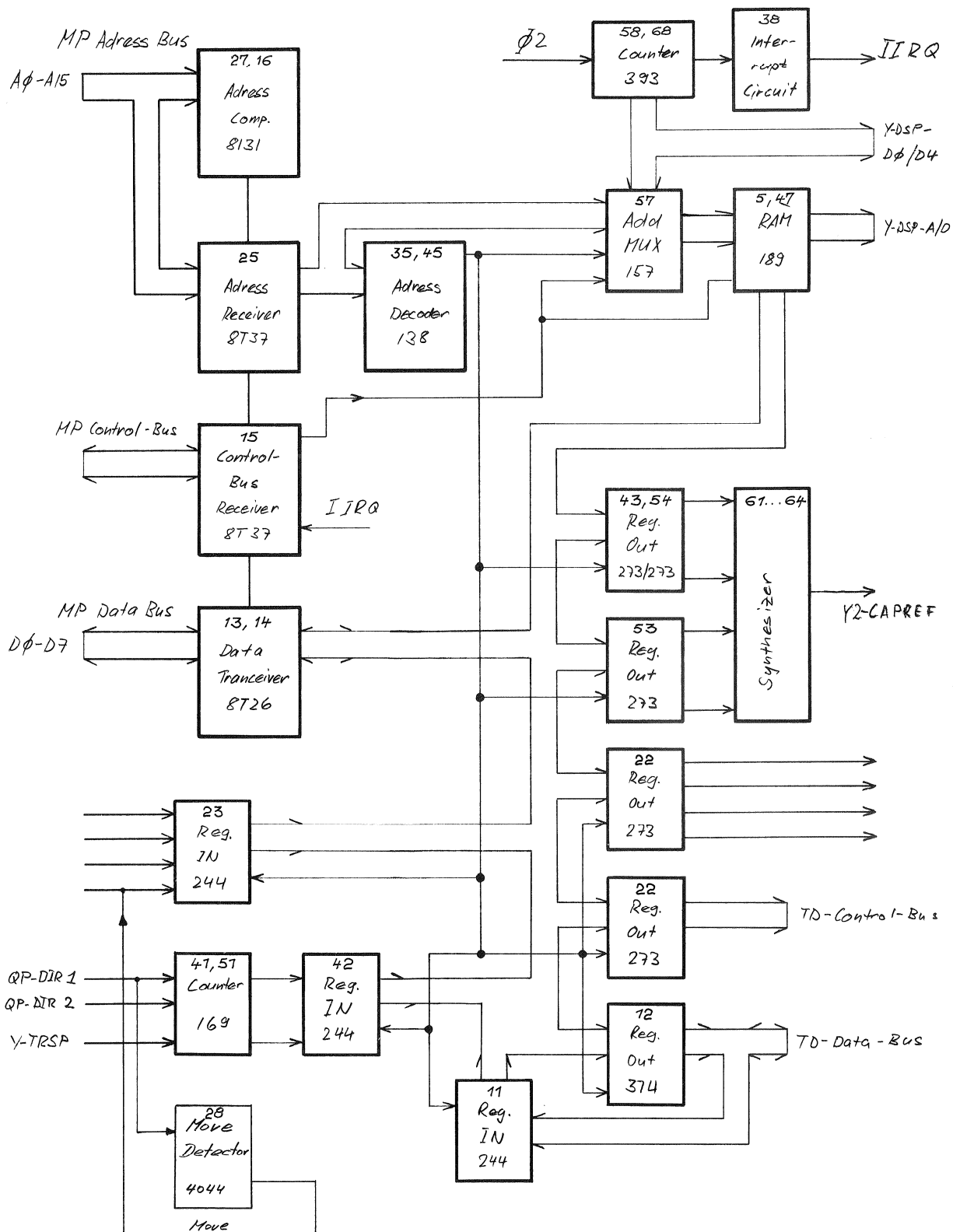
STUDER

Oscillator 13 MHz

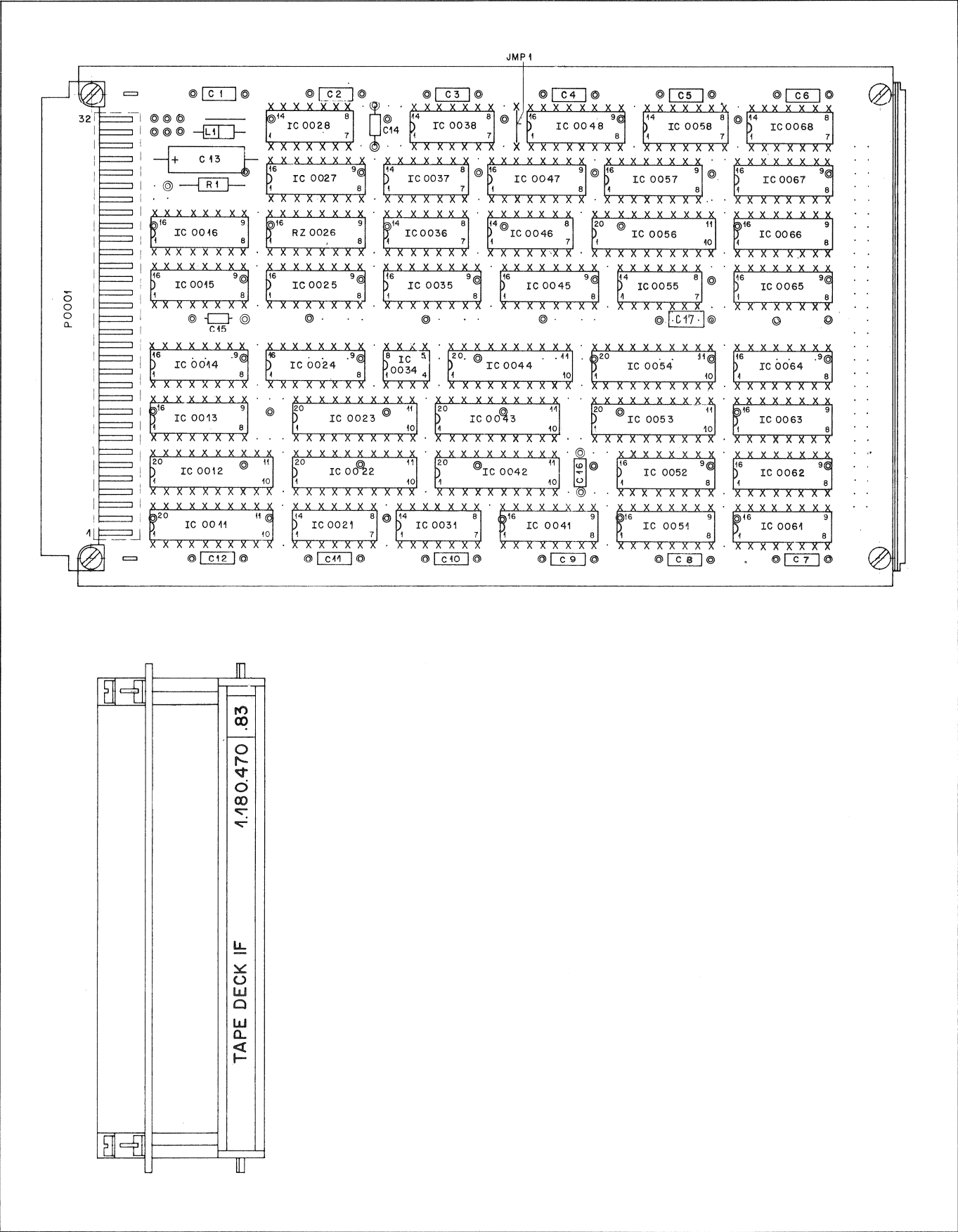
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PAGE 1 OF 1

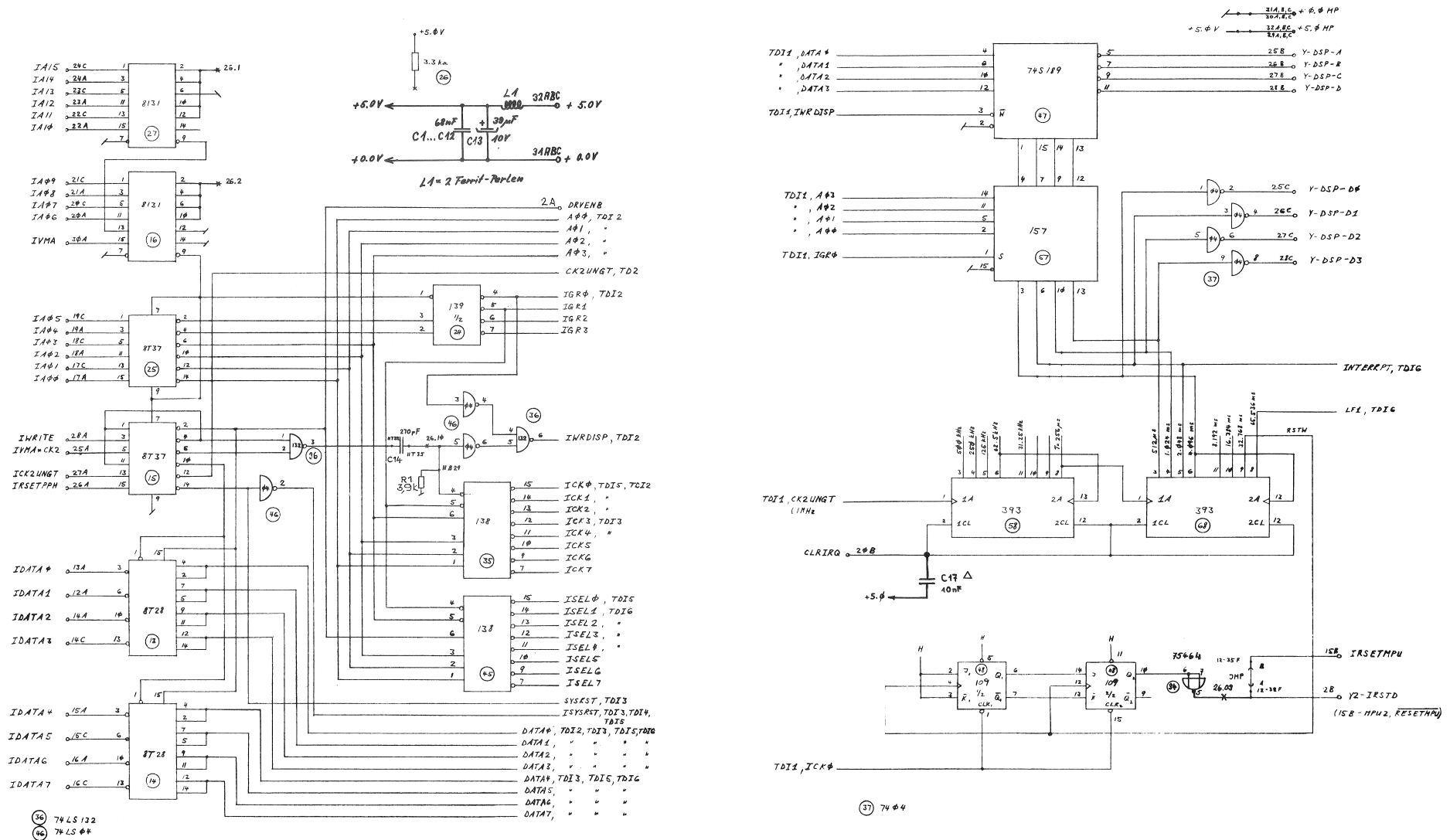
TAPE DECK INTERFACE PCB 1.180.470-83/81 GR35 EL5



TAPE DECK INTERFACE PCB 1.180.470-83/81 GR35 EL5

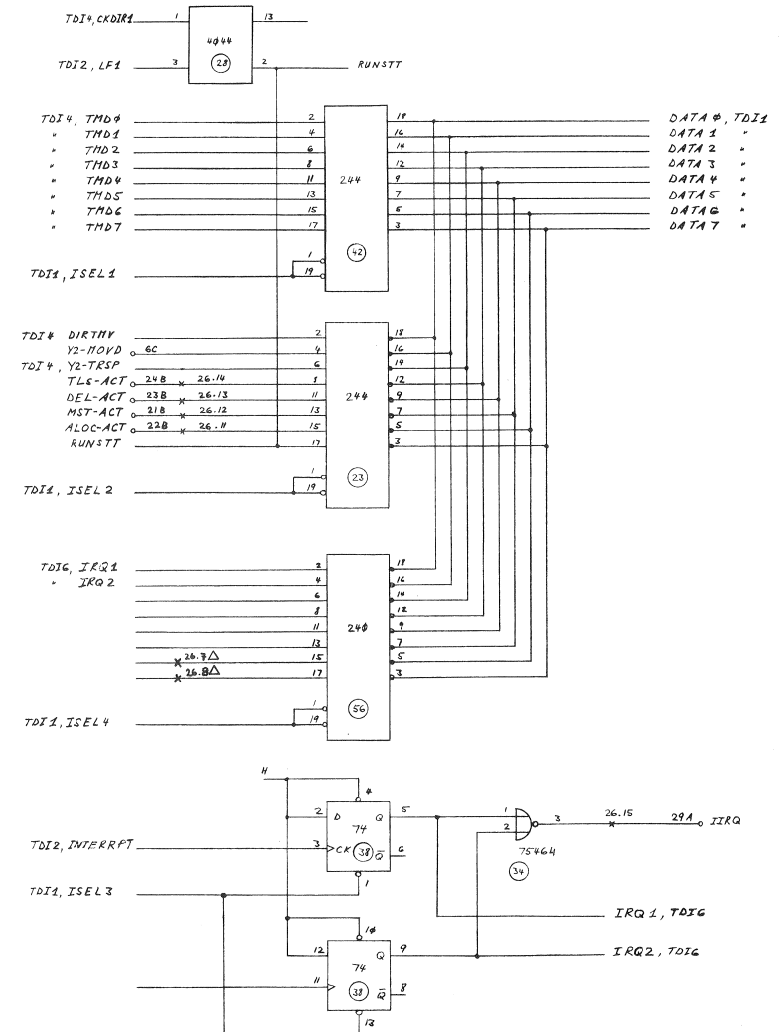
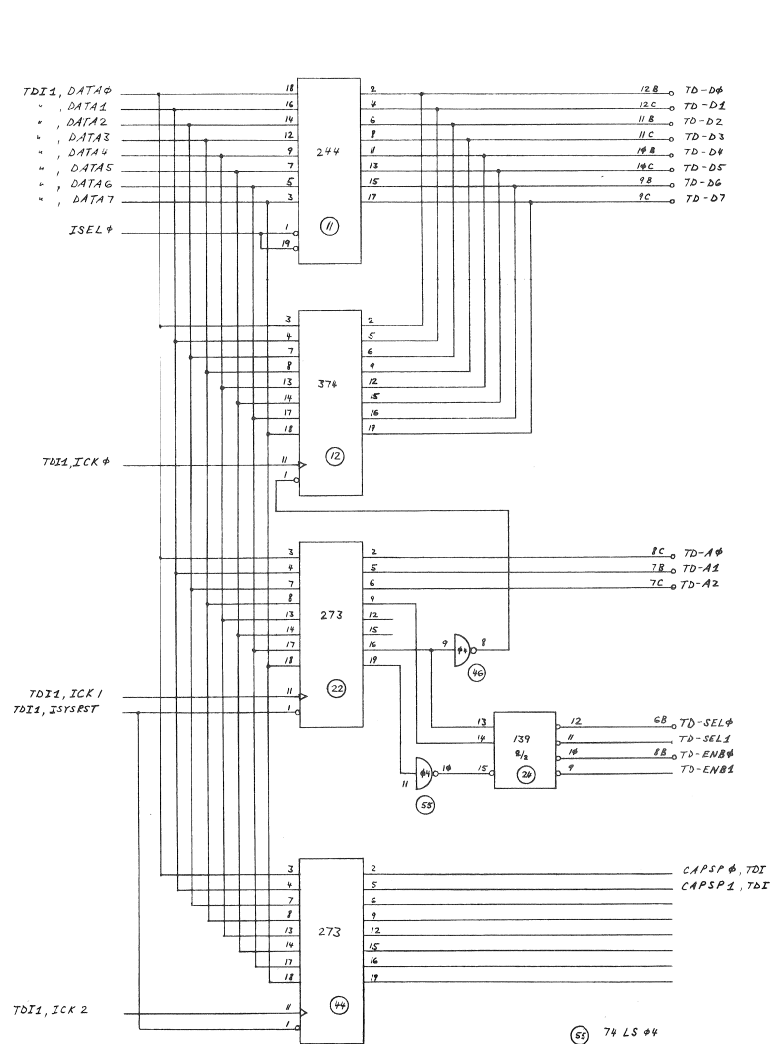


TAPE DECK INTERFACE PCB 1.180.470-83/81 GR35 EL5



Δ Modification Index - 81 to - 83

TAPE DECK INTERFACE PCB 1.180.470-83/81 GR35 EL5



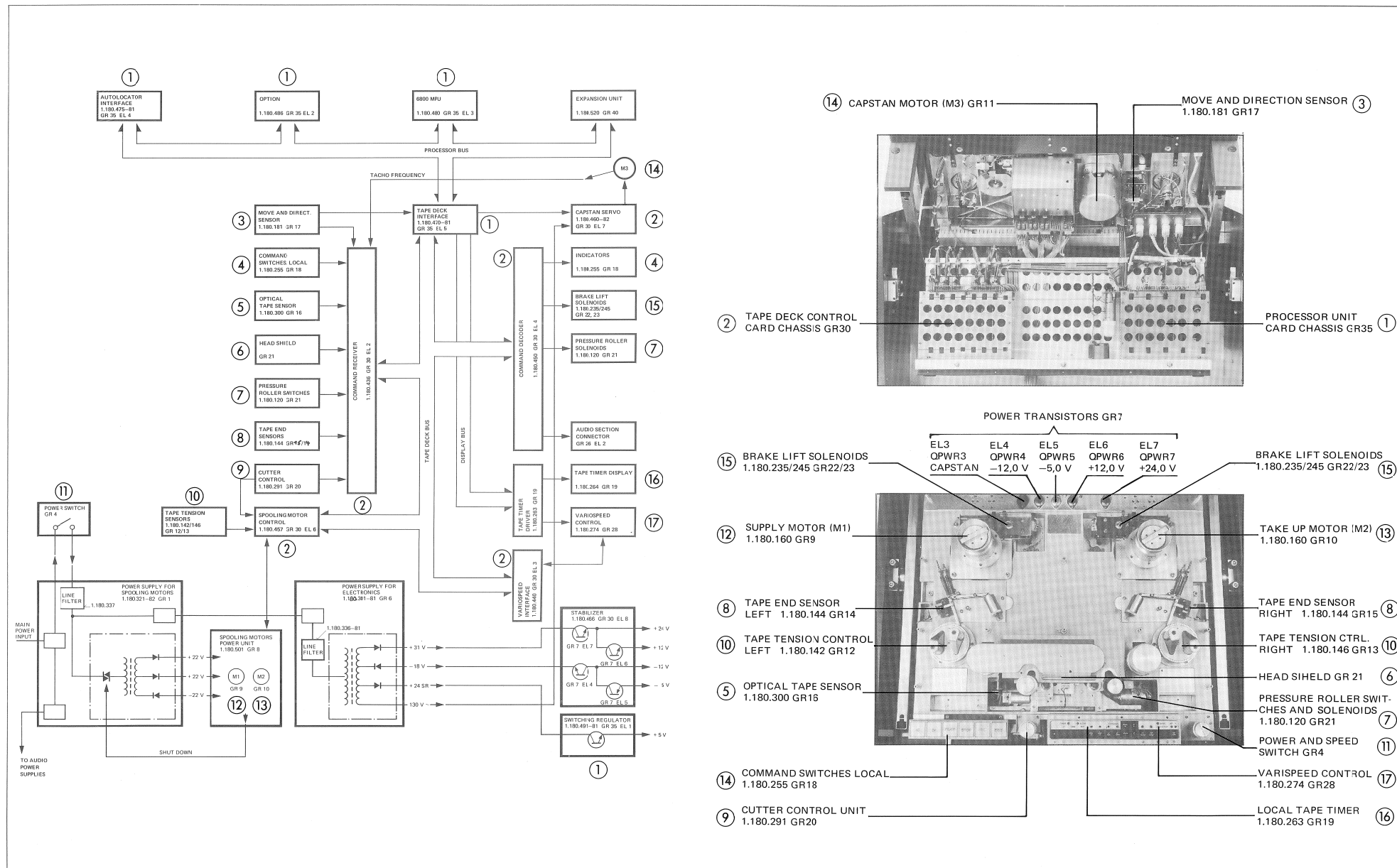
Δ Modification Index - 81 to - 83

IND	NO	PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	PART NO
IC	41	50,06,0169	SN 74 LS	169N, TTL	
IC	42	50,06,0244	SN 74 LS	244N, TTL-3	
IC	43	50,06,0273	SN 74 LS	273 8-Bit D-Flip	
IC	44	50,06,0273	SN 74 LS	273	
IC	45	50,06,0138	SN 74 LS	138N, TTL	
IC	46	50,06,0004	SN 74 LS	04N, TTL	
IC	47	50,05,0271	DM74S189N	RAM	SN74S189N
IC	48	50,06,0109	SN 74 LS	109N, TTL	
IC	51	50,06,0169	SN 74 LS	169N, TTL	
IC	52	50,06,0109	SN 74 LS	109N, TTL	
IC	53	50,06,0273	SN 74 LS	273 8-Bit D-Flip	
IC	54	50,06,0273	SN 74 LS	273	
IC	55	50,06,0004	SN 74 LS	04N, TTL	
IC	56	50,06,0240	SN 74 LS	240 8-Bit D-Flip	
IC	57	50,06,0157	SN 74 LS	157N, TTL	
IC	58	50,06,0393	SN 74 LS	393N, TTL	
IC	61	50,05,0209	SN 7497N	TTL	
IC	62	50,06,0161	SN 74 LS	161N, TTL	
IC	63	50,06,0161	SN 74 LS	161N,	
IC	64	50,06,0161	SN 74 LS	161N,	
IC	65	1,180,471,00		Oscillator	
IC	66	50,06,0161	SN 74 LS	161N, TTL	
IC	67	50,06,0153	SN 74 LS	153N,	
IC	68	50,06,0393	SN 74 LS	393N, TTL	
JMP	1	54,01,0022		Jump	

IND	DATE	NAME	IND	DATE	NAME
⑥	28.3.79		⑥		
⑥	14.2.79				
②	29.11.79		②	7.9.82	/vg
①	14.9.78		⑥	3.6.82	83
②	27.5.78	HS/gv	⑤	14.6.79	HS 01

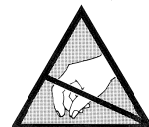
STUDER	TAPE DECK	IP PC CARD	FL	1,180,470-83	PAGE 2 OF 3
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TAPE DECK CONTROL / BLOCK DIAGRAM

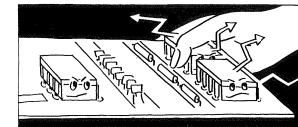


CONTENTS / AUDIO SECTION

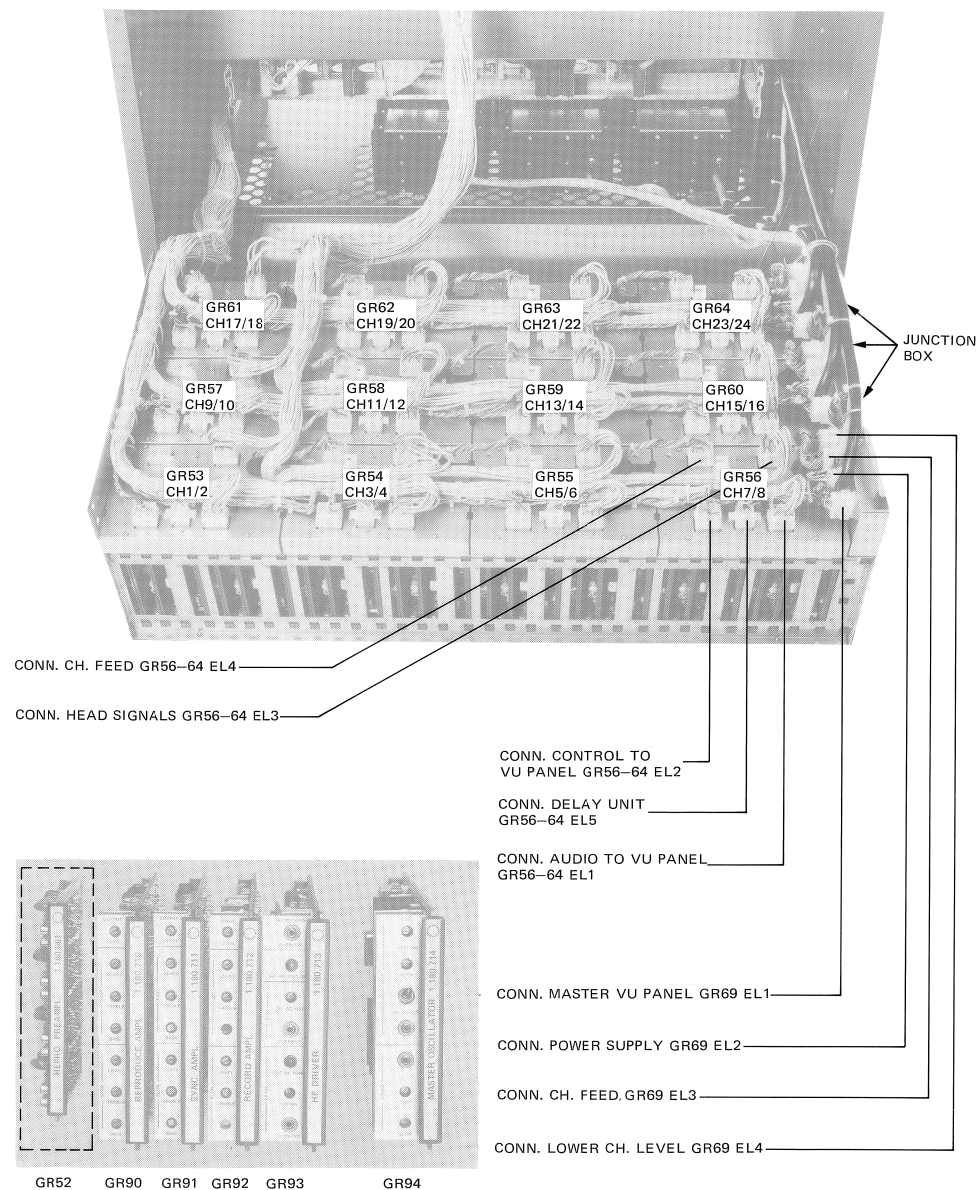
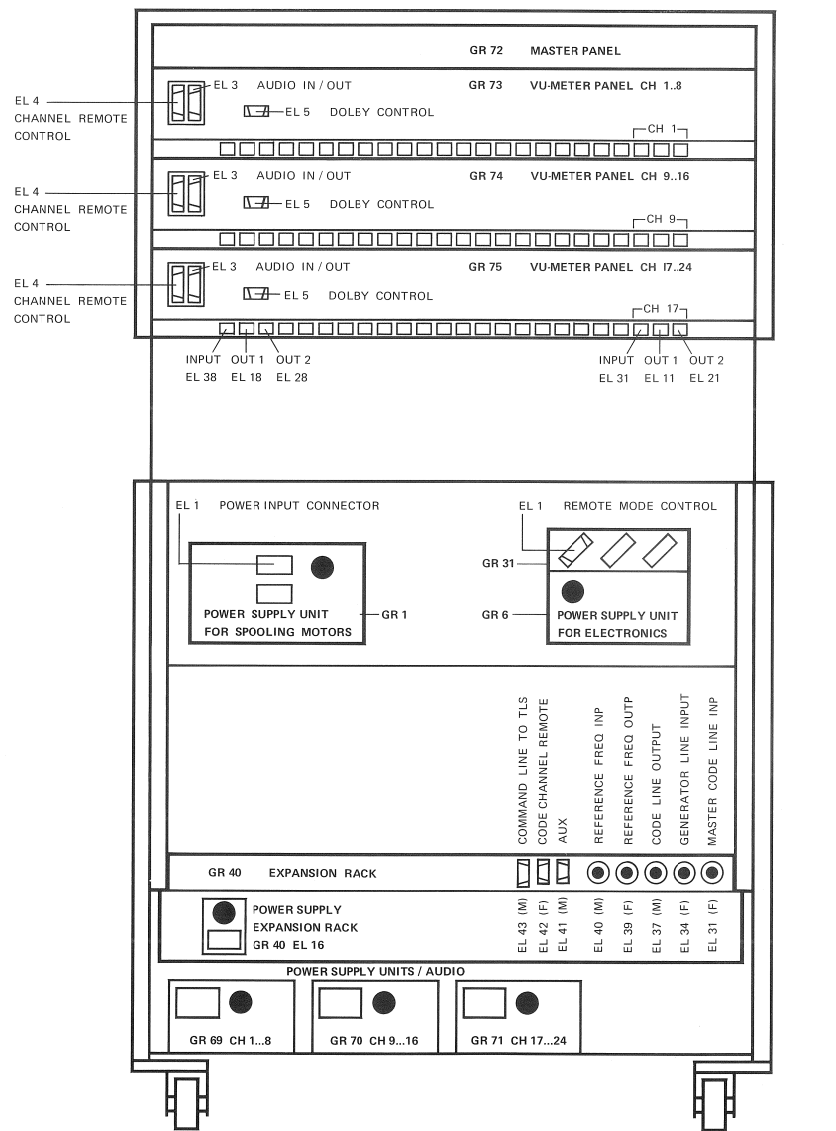
GR/EL	DESCRIPTION	SCHEMATIC NO.	SECTION/PAGE	GR/EL	DESCRIPTION	SCHEMATIC NO.	SECTION/PAGE
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	— POWER SUPPLY PCB	1,180.810—82	6/6	GR93	HF—DRIVER PCB / BLOCKDIAGRAM	1,180.713—81	6/69
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	— STABILIZER PCB +15,0V/—15,0V	1,180.816	6/7		— SUBPANEL PCB	1,180.720—81	6/70
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GR51	RELAIS PCB OF HEAD BLOCK ASSEMBLY	1,020.901—81	6/30				
GR51	RELAIS PCB OF HEAD BLOCK ASSEMBLY	1,020.901—00	6/31				
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GR91	SYNC AMPLIFIER PCB / BLOCKDIAGRAM	1,180.711—81	6/53				
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GR92	RECORD AMPLIFIER PCB / BLOCKDIAGRAM	1,180.712—00	6/61				
GR92	RECORD AMPLIFIER PCB	1,180.712—00	6/62				



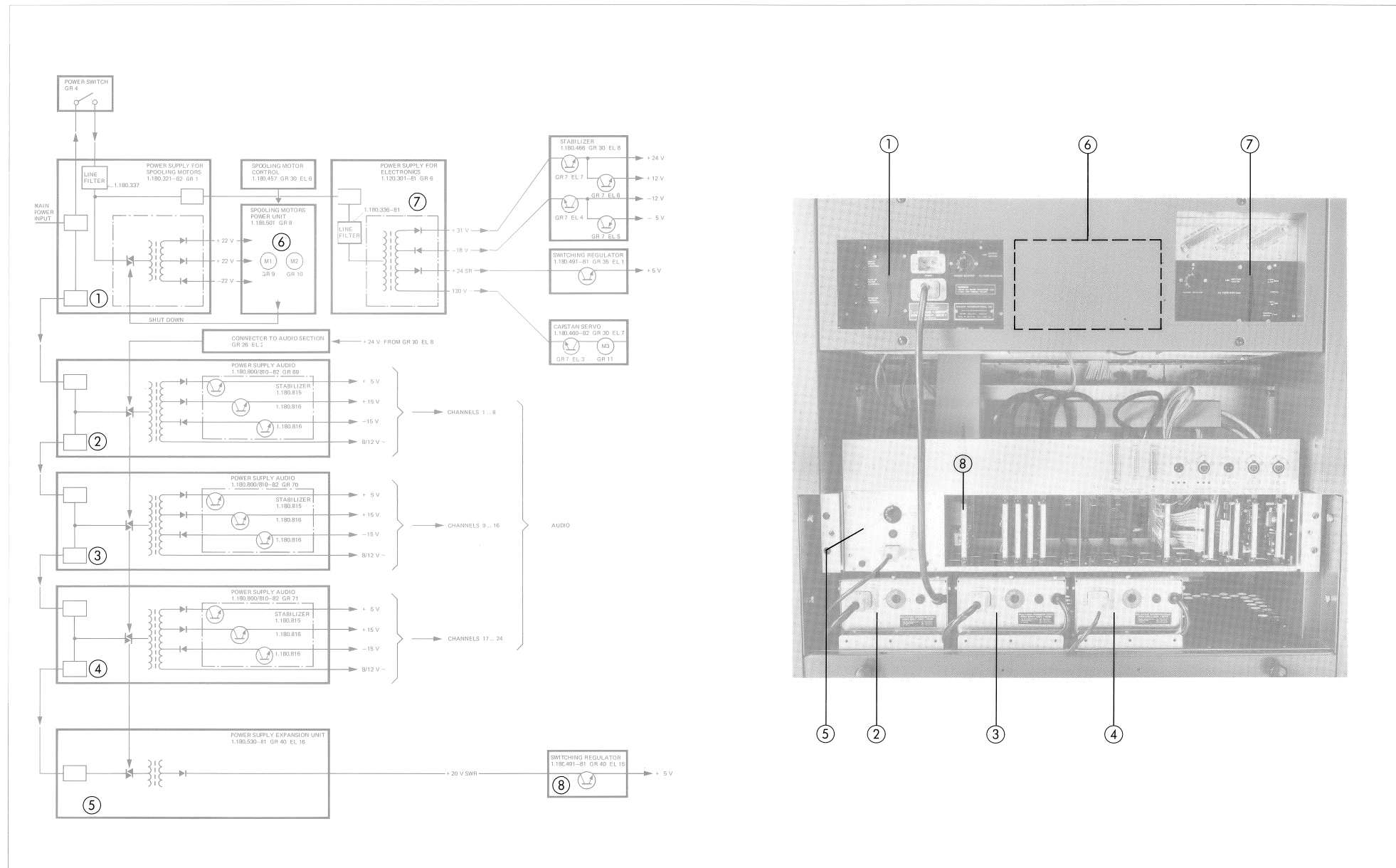
ALL PCBs MARKED WITH THIS SIGN ▲
CONTAIN COMPONENTS SENSITIVE TO
STATIC CHARGES.
PLEASE, REFER TO PREFACE BEFORE
YOU REMOVE THESE BOARDS.



GROUP NUMBERS OF AUDIO SECTION



POWER SUPPLY'S / BLOCK DIAGRAM



1.180.800
GR69/70/71

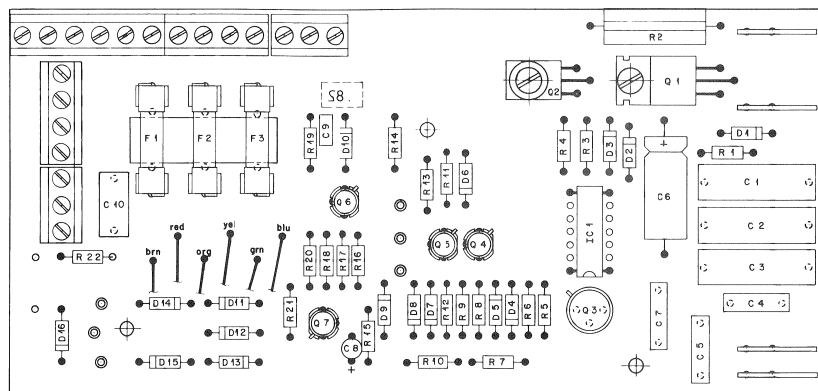


AUDIO POWER SUPPLY UNIT 1.180.800 GR69/70/71



AUDIO POWER SUPPLY UNIT 1.180.800 GR 69/70/71
POWER SUPPLY PCB 1.180.810-82
GR69/70/71

1.180.800
1.180.810-82
GR69/70/71



INDI POS NO	PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MFR
C1	5339.0453	0,1µ	250V 10% NP PNE	RjA
C2	5331.0453	0,1µ	250V 10% NP PNE	RjA
C3	5331.0453	0,1µ	250V 10% NP PNE	RjA
C4	5331.0458	2200pF	250V 20% NP PNE	RjA
C5	5336.0458	2200pF	250V 20% NP PNE	RjA
C6	5336.5707	100µ	35V 10% EL	Fr.A
C7	5336.0458	2200pF	250V 20% NP PNE	RjA
C8	5830.6338	3,3µ	35V 20% TFF	ITT
C9	5836.0265	68nF	63V 20% Minum.K	S
C10	59.02.0634	680 nF	63V 10% MPC	
D1	50.06.0722	1N4001	50V S	TH4002 H/ITT
D2	50.06.0722	1N4001	50V S	TH4002 H/ITT
D3	50.06.1117	D 75V	0,4W 5% S	
D4	50.06.1117	D 75V	0,4W 5% S	
D5	50.06.1117	D 75V	0,4W 5% S	
D6	50.06.0725	1N4003	75V S	ITT
D7	50.06.1117	D 75V	0,4W 5% S	
D8	50.06.0725	1N4003	75V S	ITT
D9	50.06.0725	1N4003	75V S	ITT
D10	50.06.0725	1N4003	75V S	ITT
D11	50.06.1118	D 62V	0,4W 5% S	
D12	50.06.1122	D 16V	0,4W 5% S	
D13	50.06.1122	D 16V	0,4W 5% S	
D14	50.06.0725	1N4003	75V S	ITT
D15	50.06.0725	1N4003	75V S	ITT
D16	50.06.0725	1N4003	75V S	ITT

INDI	DATE	NAME	S	M	P	T	P
①	11.11.80	11-82	S - Siemens	M - Motorola	P - Philips	T - Telefunken	P - Drahtw.
②	30.8.79	Kreiser	Fr - Frako	EL - Elektrolyt	CSCH - Carbon-Schicht	CMH - Carbon-Masse	
③	30.8.79	Kreiser	M - Matsuda	TP - Tamul	NP - Metallized Polycarb		
STUDER	Transformer board A 800	1.180.810-82	PAGE 1 OF 3				

INDI POS NO	PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MFR
F1	51.01.0725	6,3AT	5x 20 SLOW BLOW	
F2	51.01.0725	6,3AT	5x 20	
F3	51.01.0725	6,3AT	5x 20	
IC1	50.06.0720	CMY 21	OpA Koppler	T
Q1	50.01.0706	T2800	400V BR Triac	P
Q2	50.01.0706	T2800	400V BR Triac	M
Q3	50.03.0316	BC 100-40	NPN	F
Q4	50.03.0316	BC 100-40	NPN	S
Q5	50.03.0316	BC 100-40	NPN	S
Q6	50.03.0316	BC 100-40	NPN	S
Q7	50.03.0316	BC 100-40	NPN	P
R1	51.01.0700	10R	.25W 5% CMH	
R2	51.01.0700	22R	4W 10% DR	
R3	51.01.0700	820R	.25W 5% CSCH	
R4	51.01.0700	3K3	.25W 5% CSCH	
R5	51.01.0700	2K2	.25W 5% CSCH	
R6	51.01.0700	100R	.25W 5% CSCH	
R7	51.01.0700	220R	.25W 5% CSCH	
R8	51.01.0700	40K	.25W 5% CSCH	
R9	51.01.0700	33K	.25W 5% CSCH	
R10	51.01.0700	100R	.25W 5% CSCH	
R11	51.01.0700	1K	.25W 5% CSCH	
R12	51.01.0700	22K	.25W 5% CSCH	
R13	51.01.0700	2K2	.25W 5% CSCH	
R14	51.01.0700	1K	.25W 5% CSCH	
R15	51.01.0700	10K	.25W 5% CSCH	
R16	51.01.0700	1K	.25W 5% CSCH	

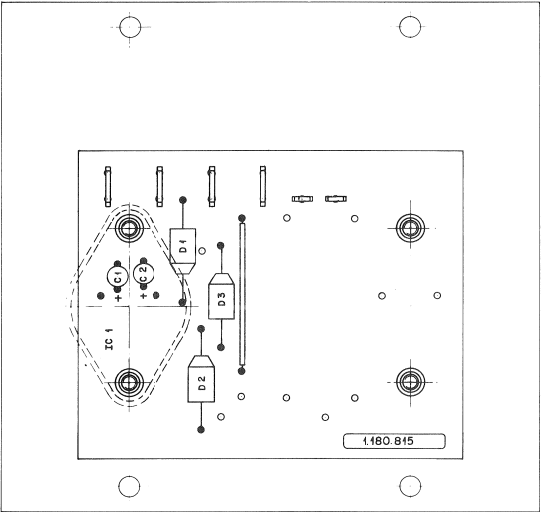
INDI	DATE	NAME	T	DR	CSCH	CMH
①	11.11.80	11-82	T - Telefunken	DR - Drahtw.	CSCH - Carbon-Schicht	CMH - Carbon-Masse
②	30.8.79	Kreiser	M - Motorola	P - Philips	NP - Metallized Polycarb	
③	30.8.79	Kreiser	S - Siemens			
STUDER	Transformer board A 800	1.180.810-82	PAGE 2 OF 3			

INDI POS NO	PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MFR
R17	51.01.0700	1K	.25W 5% CSCH	
R18	51.01.0700	1K	.25W 5% CSCH	
R19	51.01.0700	1K	.25W 5% CSCH	
R20	51.01.0700	1K	.25W 5% CSCH	
R21	51.01.0700	1K	.25W 5% CSCH	
R22	51.01.0700	100R	.25W 5% CMH	

INDI	DATE	NAME	S	M	P	T	P
①	11.11.80	11-82	S - Siemens	M - Motorola	P - Philips	T - Telefunken	P - Drahtw.
②	30.8.79	Kreiser	Fr - Frako	EL - Elektrolyt	CSCH - Carbon-Schicht	CMH - Carbon-Masse	
③	30.8.79	Kreiser	M - Matsuda	TP - Tamul	NP - Metallized Polycarb		
STUDER	Transformer board A 800	1.180.810-82	PAGE 3 OF 3				

AUDIO POWER SUPPLY UNIT 1.180.800 GR69/70/71
STABILIZER PCB +5V 1.180.815

1.180.800
1.180.815
1.180.816
GR69/70/71 STABILIZER PCB +15V/-15V 1.180.816



POS NO	PART NO	VALUE	SPECIFICATIONS	EQUIVALENT	MFR
C 1	59.30.6109	10µF	-20% 35V	TA	
C 2	59.30.6109	10µF	-20% 35V	TA	
D 1	50.04.0507	1N 5402	equiv.		
D 2	50.04.0507	1N 5402	equiv.		
D 3	50.04.0507	1N 5402	equiv.		
IC 1	50.05.0238	LM 323 K	+5V Voltage Regulator	N, P	

N = NSC
P = Philips
M = Matsushita

IND DATE NAME

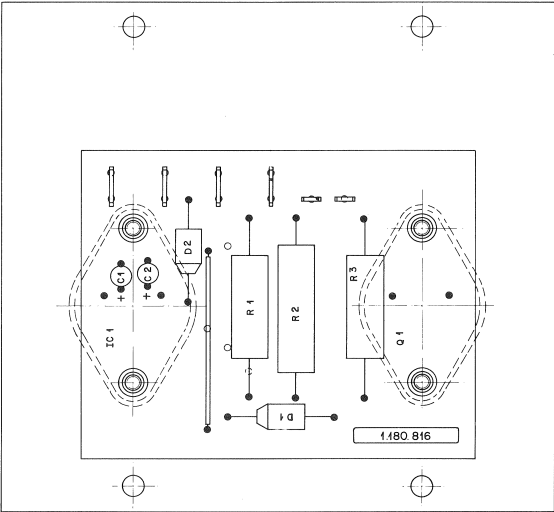
IND DATE NAME

STUDER

Stabilisator +5V

1.180.815

PAGE 1 of 1



POS NO	PART NO	VALUE	SPECIFICATIONS	EQUIVALENT	MFR
C 1	59.30.6100	10µF	-20% 35V	TA	
C 2	59.30.6100	10µF	-20% 35V	TA	
D 1	50.04.0507	1N 5402	equiv.		
D 2	50.04.0507	1N 5402	equiv.		
IC 1	50.05.0262	LM340KC-15	Voltage Regulator 45V, 5%	N, P	
Q 1	50.03.0348	2N 5884	NPN Power	M	
R 1	57.56.5698	0.68 Ω	10% 1/4	DR	
R 2	57.56.5228	0.22 Ω	10% 1/4	DR	
R 3	57.56.5478	4.7 Ω	10% 1/4	DR	

N = NSC
P = Philips
M = Matsushita

IND DATE NAME

IND DATE NAME

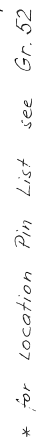
STUDER

Stabilisator 45v

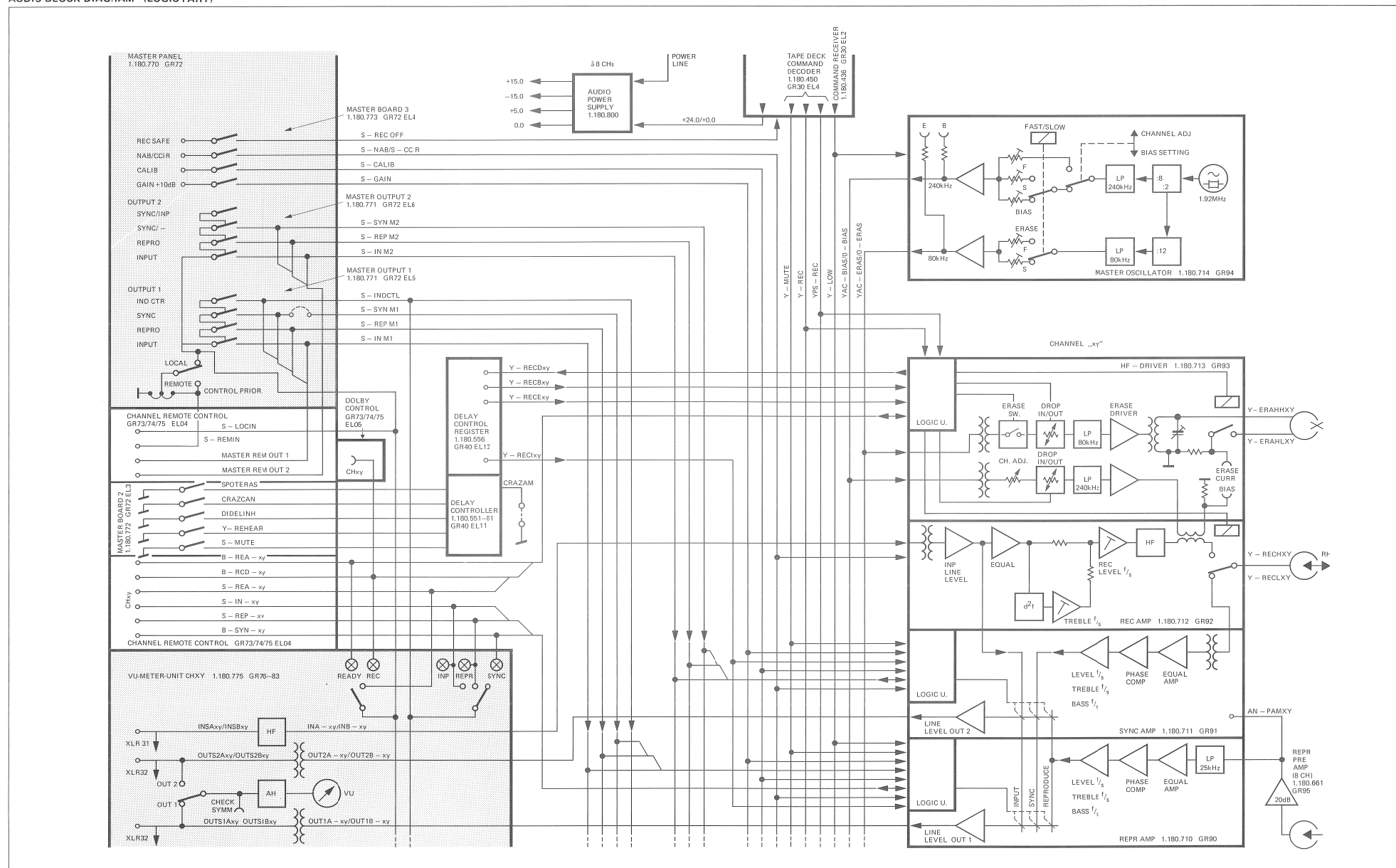
1.180.816

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04.82



AUDIO BLOCK DIAGRAM (LOGIC PART)



TRUTH TABLE / AUDIO SECTION

TIME TABLE DROP IN / OUT

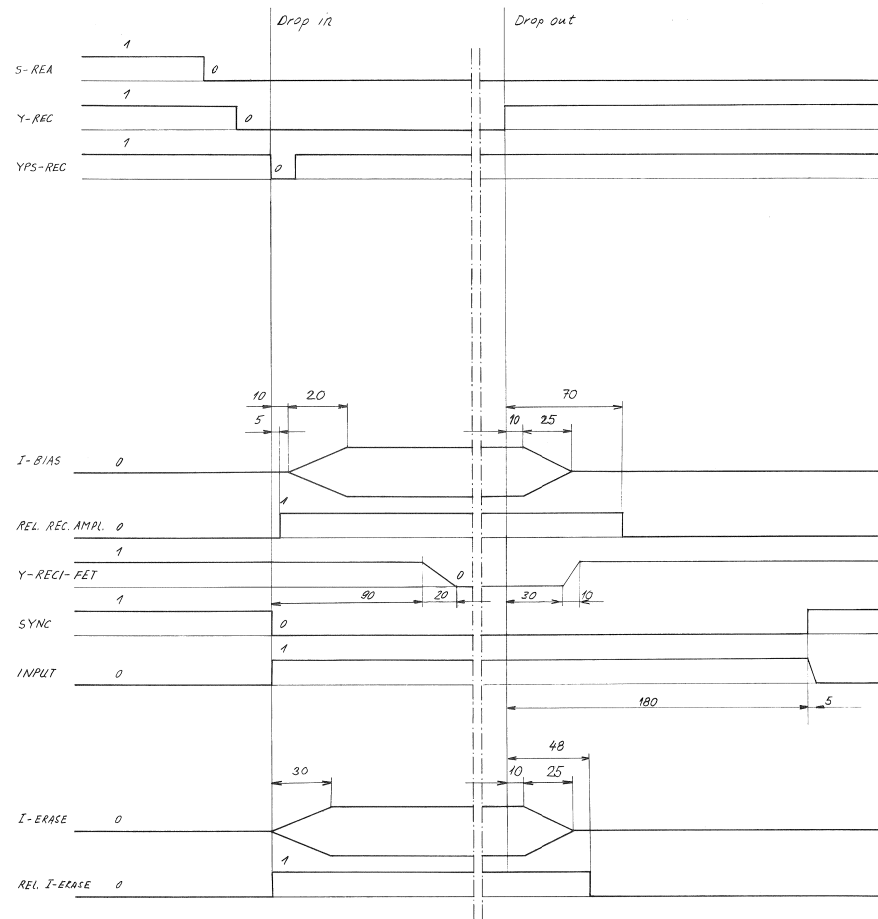
Audio Local Control										Audio Remote Control				Record	Output Signal		
Key	Master Output 1				Ind. Ctrl.		Master Output 1			Ind. Ctrl.	Master Output 2		Ind. Ctrl.	Mode	Output 1	Valid for CKE	
Remote	Input	Repro	Sync	Ind. Ctrl.	Input	Repro	Sync	Ind. Ctrl.	Input	Repro	Sync	Ind. Ctrl.	Input			all	selection
0	X				X	X								X/0	Input	X	
														X/0			X
			X											X			X ^{o)}
				X			X							X			X ^{o)}
X									X					X/0	Reproduce	X	
										X			X	X/0			X
										X				X			X ^{o)}
										X				X			X ^{o)}
0	X					X								X/0	Sync.	X	
X							X							X/0		X	
0		X												0		X	X
X								X						0		X	X
↓ Master Output 2										Master Output 2				↓	Output 2	↓	
	Input	Repro	Sync	Sync/ho						Input	Repro	Sync	Sync/ho				
0	X				→									X/0	Input	X	
				X	→				X					X			X ^{o)}
X					→						X			X			X ^{o)}
0	X				→					X				X/0		X	
X					→					X				X/0	Reproduce	X	
0		X			→									0			X ^{o)}
X			X		→						X			0			X ^{o)}
0				X	→									0			X ^{o)}
X					→						X			0	Sync.		X ^{o)}
X					→						X			0			X ^{o)}

*) Jumper for function "mute" note wr. diagram Master Panel, board output 1 NO 1,180,771

o) Group of channels "record mode"

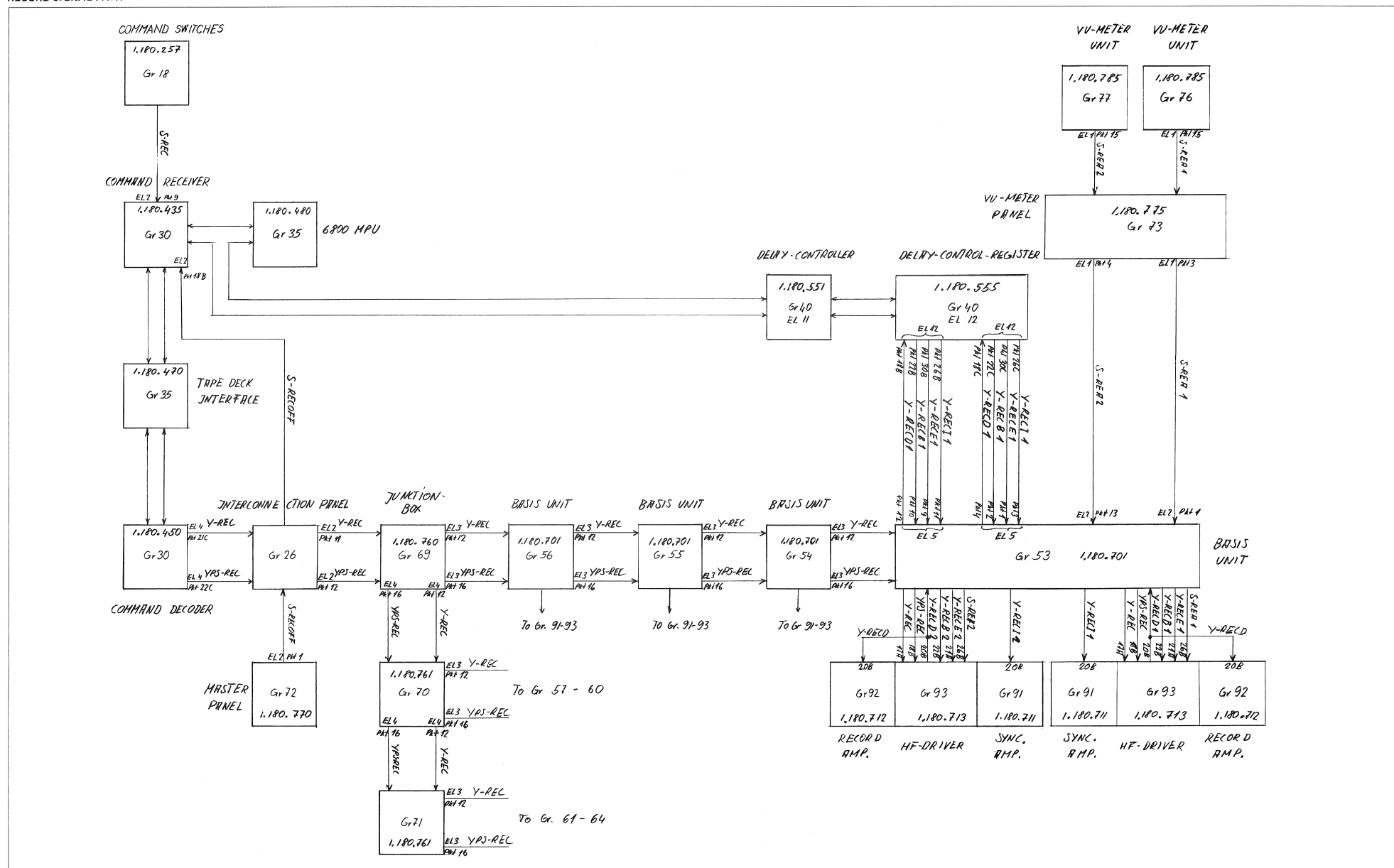
o) Group of channels "non record mode"

(Key, Ready" has no influence).

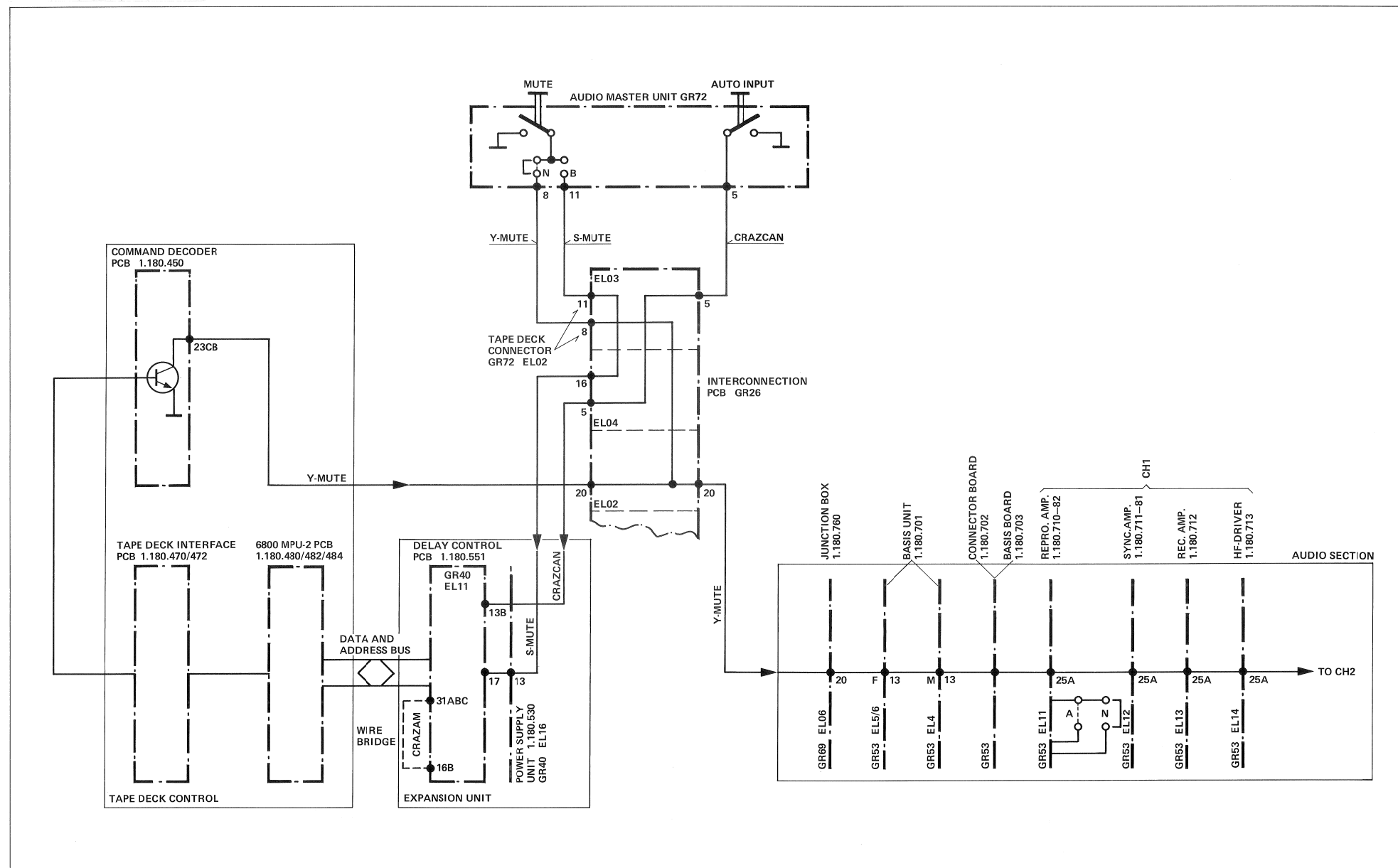


t [ms] 0 10 20 30

RECORD SIGNAL PATH



MUTE AND AUTO INPUT SIGNAL PATH



TRUTH TABLE/MUTE AND AUTO INPUT

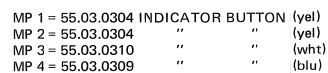
OPTIONEN			LEGENDE S SYNC M MUTE I INPUT S★ SYNC CHANNEL OPERATING (NO SENSIBLE SIGNAL) "READY" KEY DEPRESSED Y X "READY" KEY NOT DEPRESSED "SAFE"						
JUMPER ON AUDIO MASTER PANEL IN POSITION: B OR N (1.180.772-81)	JUMPER ON REPRODUCE AMPLIFIER IN POSITION: A OR N (1.180.710-82)	WIRE BRIDGE ON DELAY CONTROLLER PLUG PT 16B CONNECTED WITH PT 31A (1.180.551-81)		TAPE SPEED = 0 STOP	TAPESPEED V ≠ 0				» « TAPE IS NOT IN TOUCH WITH HEADS
					PLAY EDIT » «	RECORD	TLS SAMPLING		
N	N	NO	MUTE OFF	I / I	S / S	S / I	M / M	I / I	
			MUTE ON	M / M	M / M	M / M	M / M	M / M	
B	N	NO	MUTE OFF	I / I	S / S	S / I	M / M	I / I	
			MUTE ON	I / I	S / S	S / I	M / M	M / M	
B	A	NO	MUTE OFF	I / I	S / S	S / I	I / I	I / I	
			MUTE ON	I / I	S / S	S / I	I / I	I / I	
B	A	YES	MUTE OFF	S★ / I	S / S	S / I	M / I	S★ / I	
			MUTE ON	S★ / I	S / S	S / I	M / I	M / I	
N	N	YES	MUTE OFF	S★ / I	S / S	S / I	M / M	S★ / I	
			MUTE ON	M / M	M / M	M / M	M / M	M / M	
N	A	YES	MUTE OFF	S★ / I	S / S	S / I	M / I	S★ / I	
			MUTE ON	M / I	M / M	M / I	M / I	M / I	
N	A	NO	MUTE OFF	I / I	S / S	S / I	I / I	I / I	
			MUTE ON	I / I	M / M	M / I	I / I	I / I	
B	N	YES	MUTE OFF	S★ / I	S / S	S / I	M / M	S★ / I	
			MUTE ON	S★ / I	S / S	S / I	M / M	M / M	

≡ MOST COMMON CASE

1.180.770
GR72

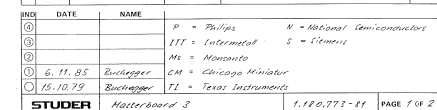


1.180.771
GR72 EL5/6

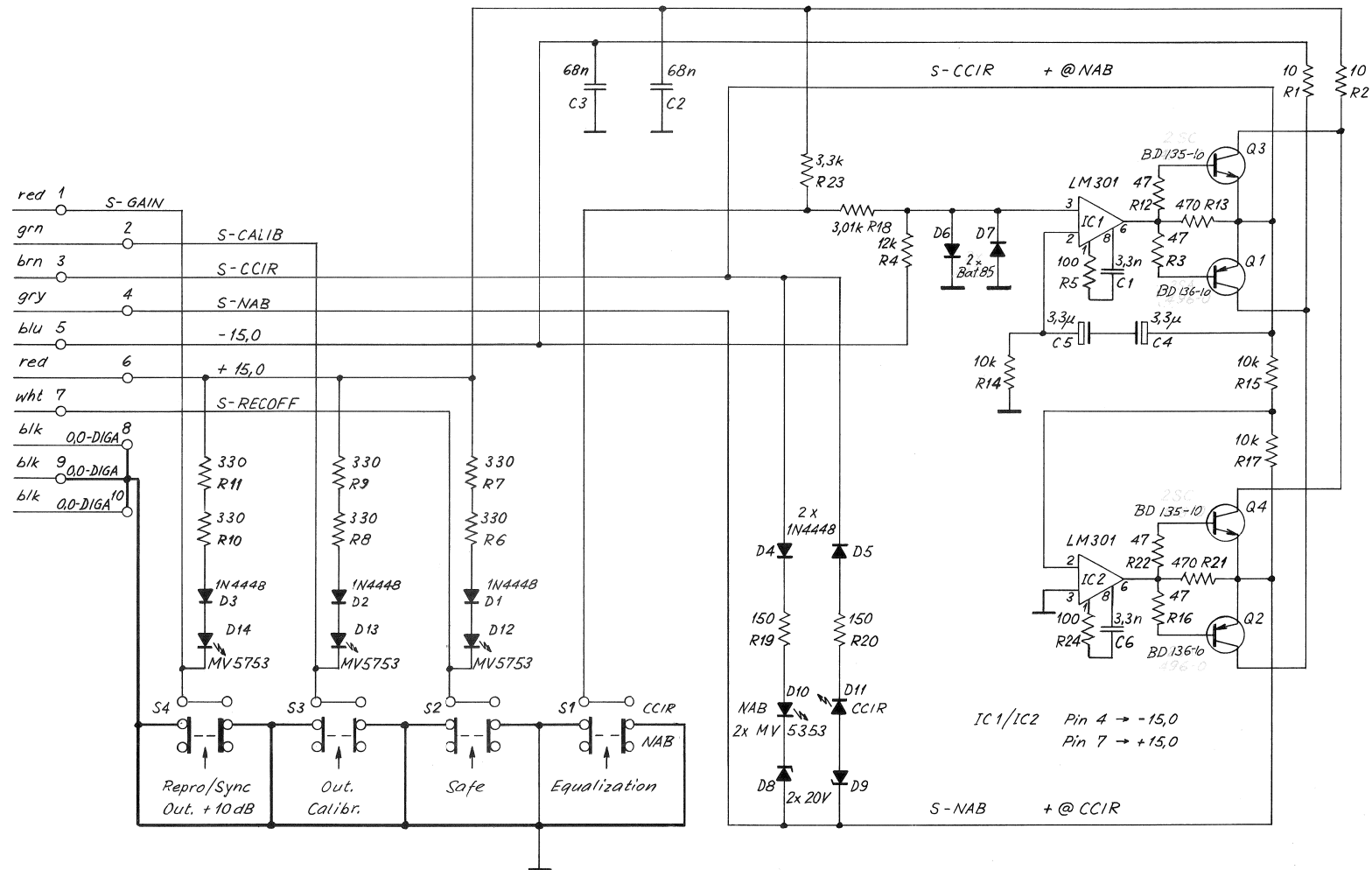


IND	DATE	NAME		
④			ITT = ITT (Shadow)	
③			M ₂ = Morianta	
②			M ₀₂ = Morantia	
①	28.6.73	Bendroger		
○	24.6.79	Bendroger		
STUDER			Motatorboard 1	1.180.771
				PAGE 1 of 1

1.180.773-81
GR72 EL4



MASTER BOARD 3 1.180.773-81 GR72 EL4

1.180.773-81
GR72 EL4

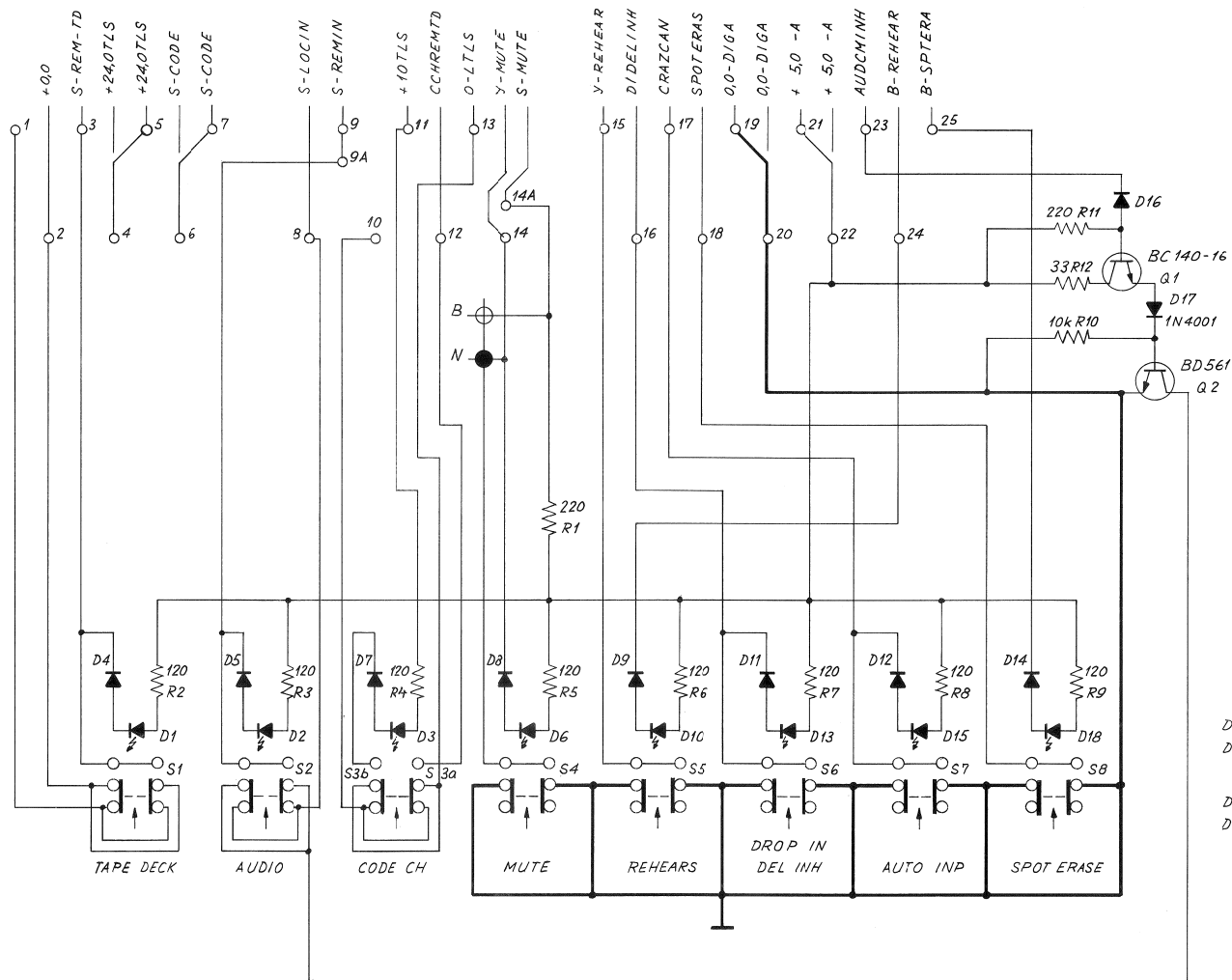
1.180.772-81
GR72 EL3



IND	DATE	NAME	
④		M ₂ = Montanto	S = Siemens
③		P = Philippe	F = Fairchild
②		Tr = Transistor	At = Atel
①		I = ITT	
○	27.2.80	Zuchegger	M = Motorola
STUDER		Masterboard 2	1.180.772-81
			PAGE 1 OF 2

IND	DATE	NAME		
⑤			Sch - Schadow (ITT)	
③				
②				
①				
○	27.2.80	Bundheppner		
STUDER		Hallerboord 2	1,180,772-81	PAGE 2 OF 2

MASTER BOARD 2 1.180.772-81 GR72 EL3

1.180.772-81
GR72 EL3

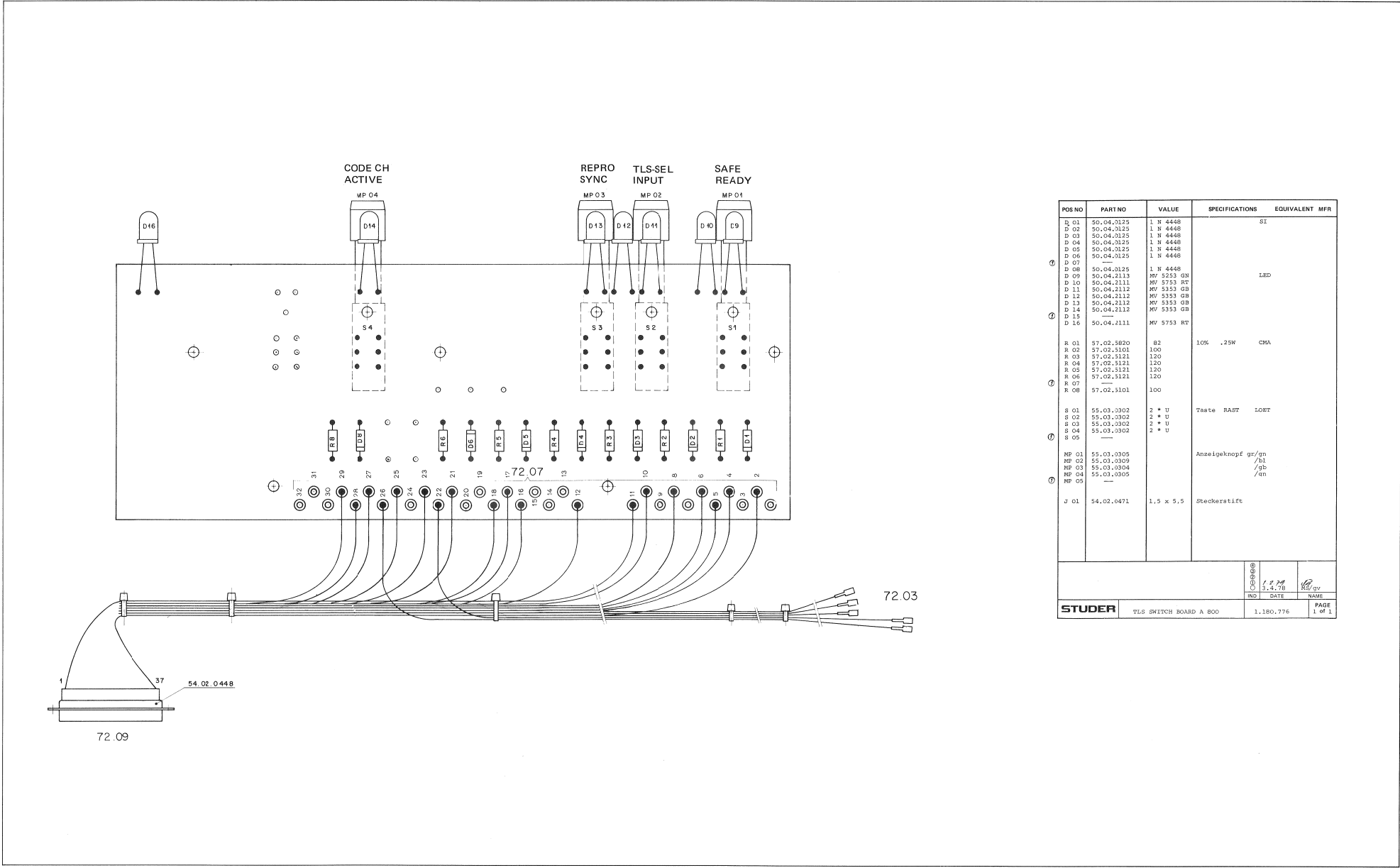
D1, D2, D3, D6, D10, D13
D15, D18: LED MV5353

D4, D5, D7, D8, D9, D11, D12
D14, D16: 1N4448

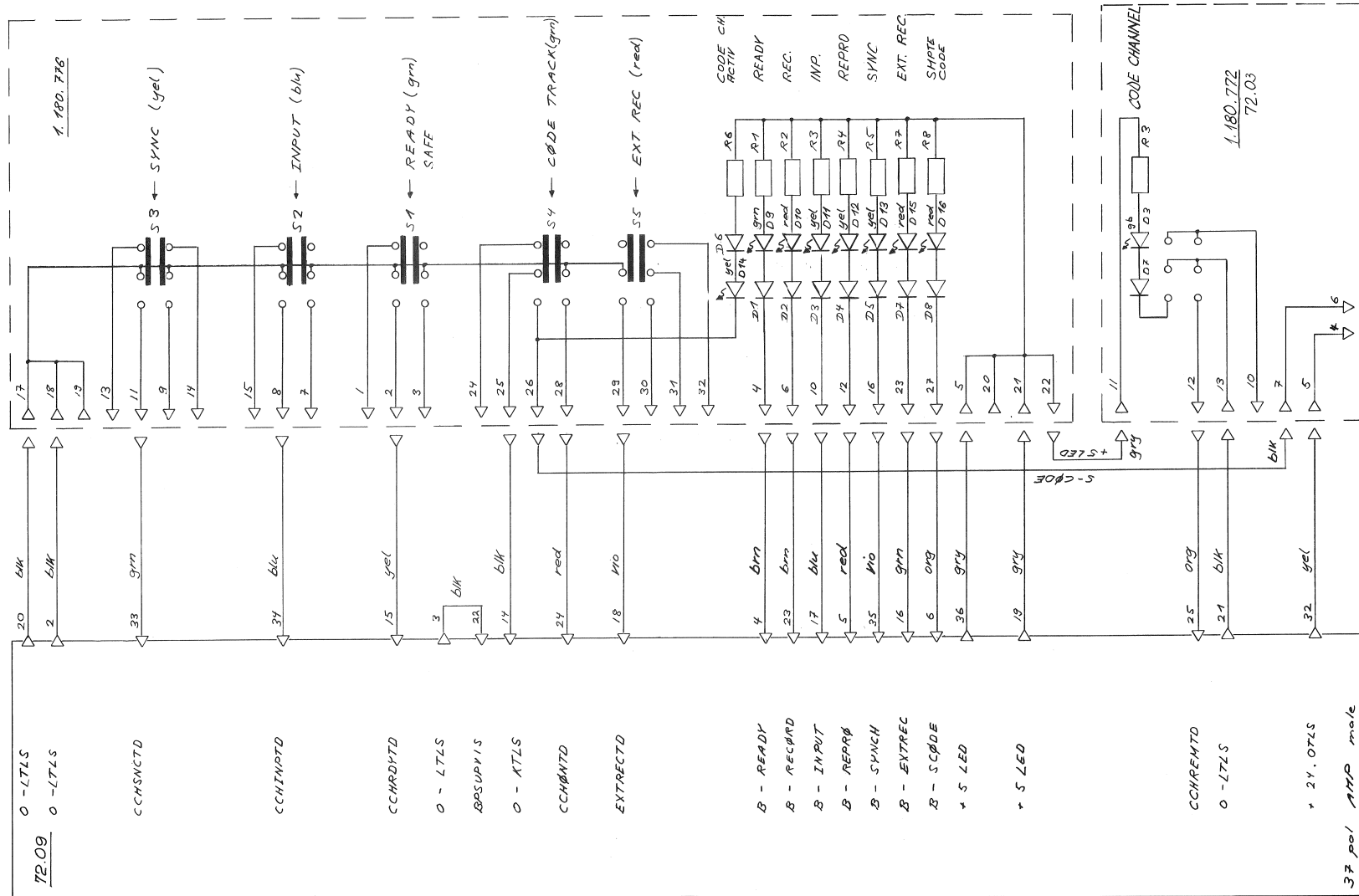
Jumper position (Mute Button on) N: total mute of outputs
B: mute by rewind and forw.

1.180.776
GR72 EL7

TLS SWITCH BOARD 1.180.776 GR72 EL7

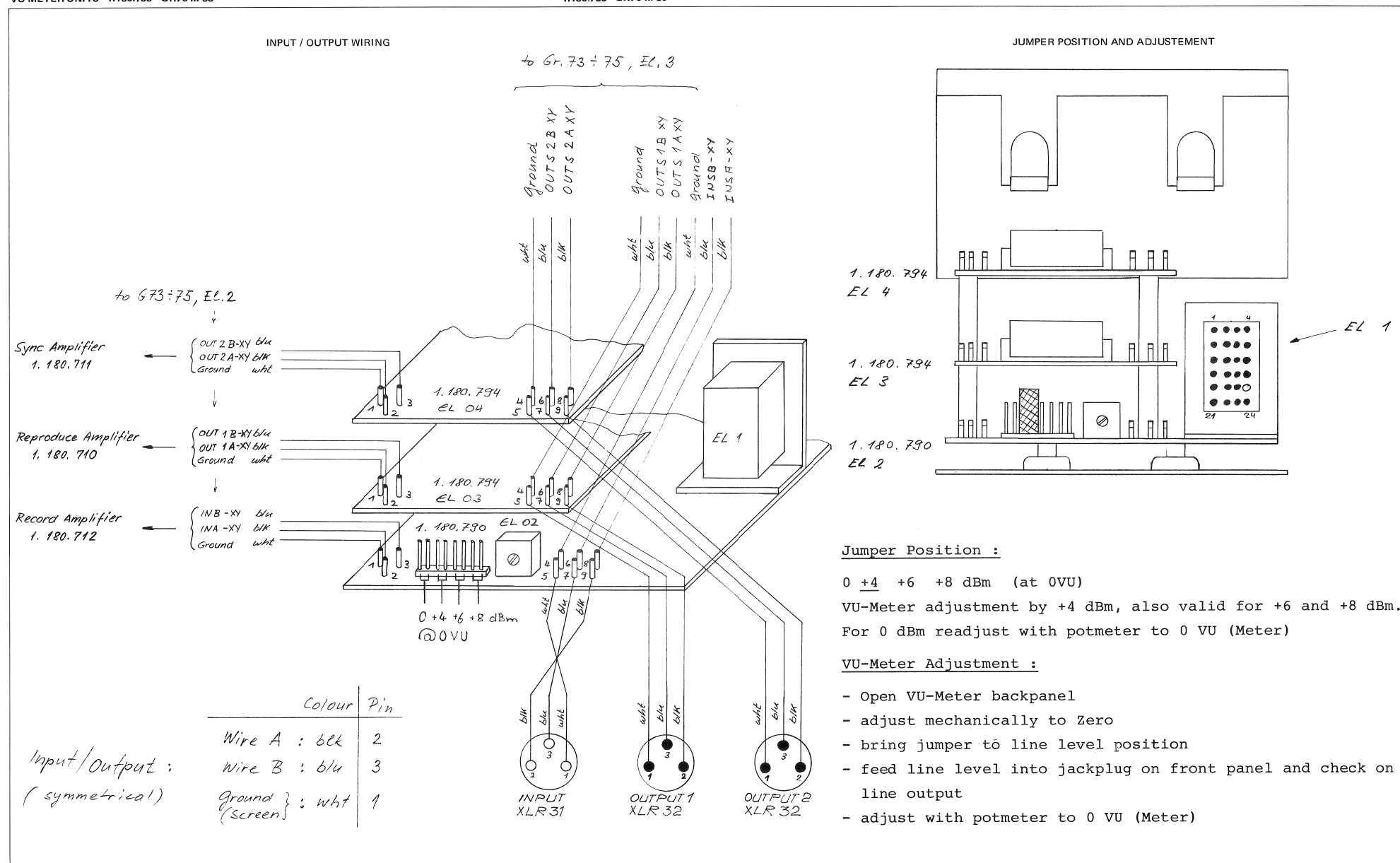


TLS SWITCH BOARD 1.180.776 GR72 EL7

1 180 776
GR72 EL7

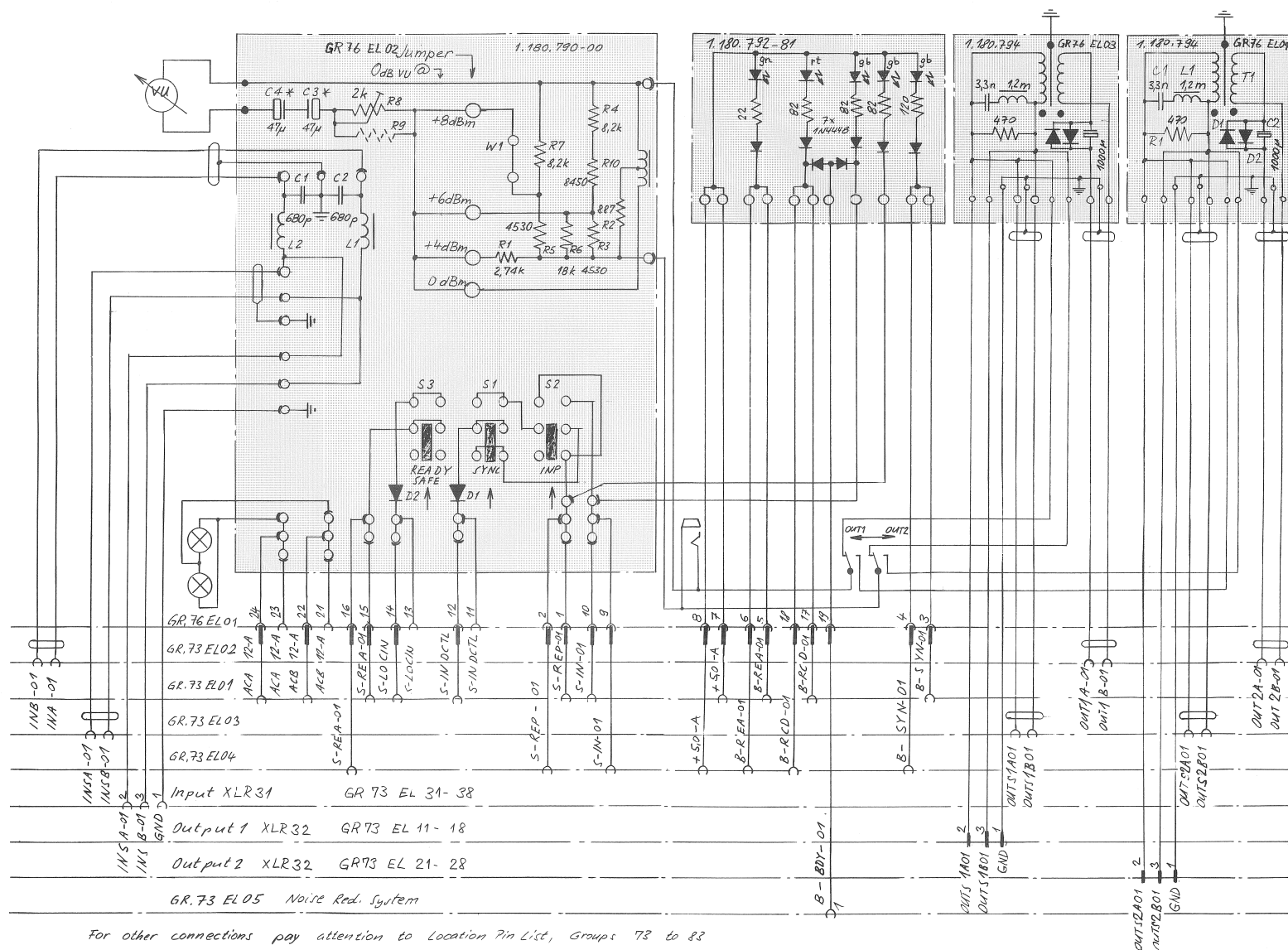
VU-METER PANEL	1.180.775	GR73/74/75
VU-METER UNITS	1.180.785	GR76 ... 83

1.180.775 GR73/74/75
1.180.785 GR76 ... 83



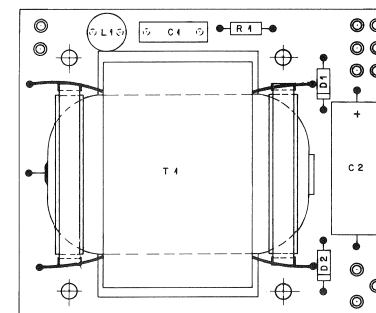
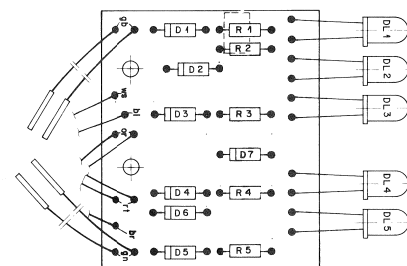
VU-METER PANEL 1.180.775 GR73/74/75
 VU-METER UNITS 1.180.785 GR76 ... 83

1.180.775 GR73/74/75
 1.180.785 GR76 ... 83

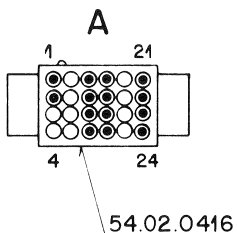


1.180.794 GR76 EL3/4

TRAFO PCB 1.180.794 GR 76 EL 3/4

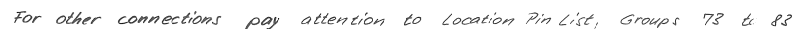
[illegible]

POS NO	PART NO	VALUE	SPECIFICATIONS	EQUIVALENT	NFR
D1	59,41,6332	3.3nF	±5%		
C2	59,25,1102	1000µF	±10%	6V	
D1,2	59,04,0122	1N4001	1A	5I	
L1	62,02,2122	1.2mH	±5%		
R1	57,02,5471	470Ω	±10%		
T1	1,0910,201				

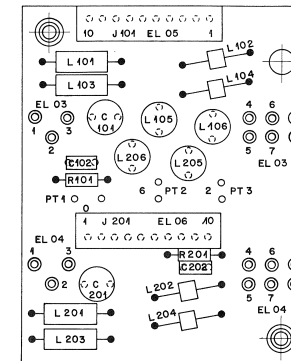
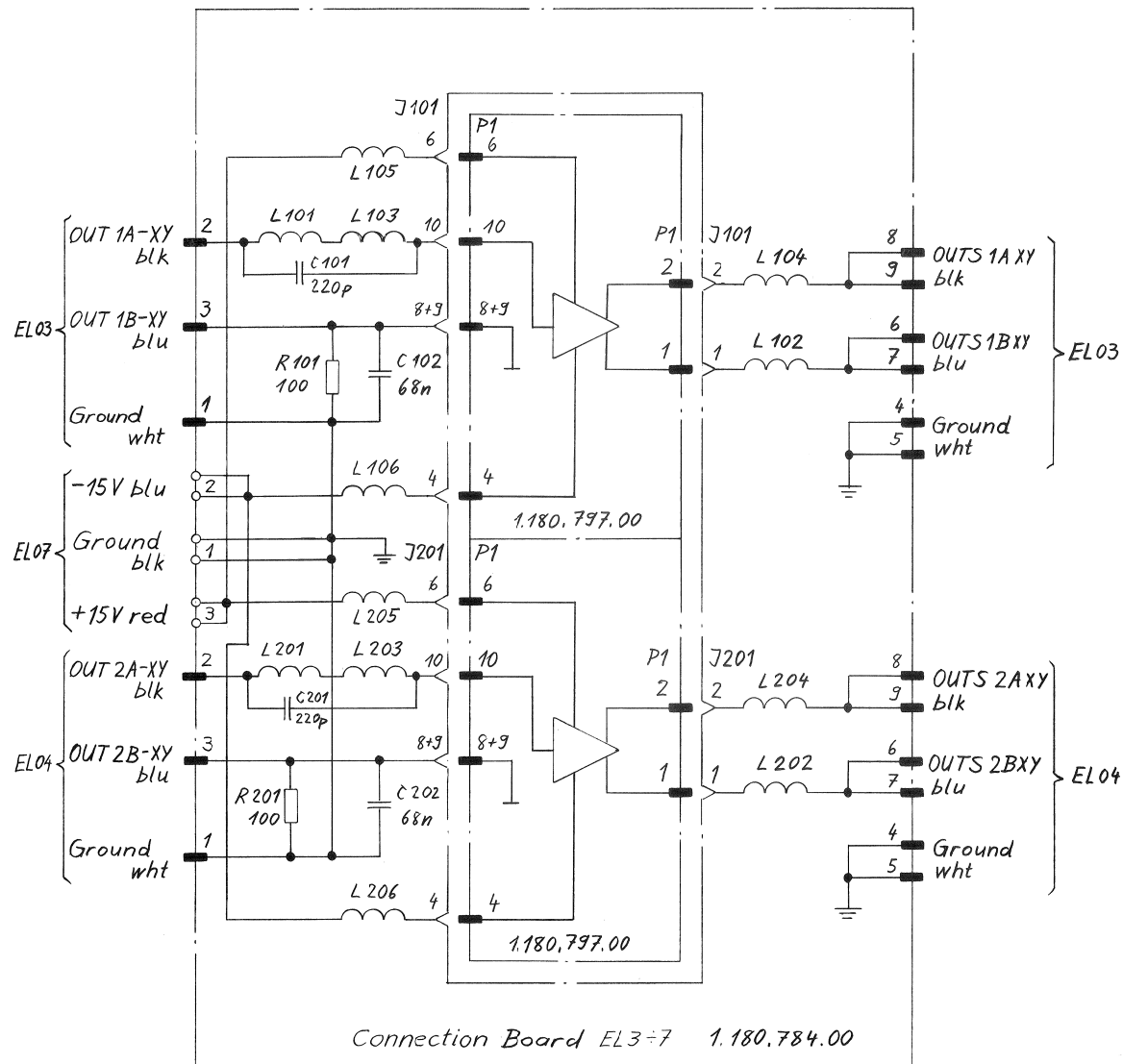
[illegible]

MP 1 = 55.03.0305 INDICATOR BUTTON (grn)
MP 2 = 55.03.0309 " " (blu)
MP 3 = 55.03.0304 " " (yel)

VU-METER UNIT 1.180.786



CONNECTION BOARD 1.180.784 GR76 EL5

1.180.784
GR76 EL5

IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
C...	101	59.05.1221	220 pF	630V, PP	ERO,NSF
C...	102	59.09.0205	68 nF	Ce	ERO,NSF
C...	201	59.05.1221	220 pF	630V, PP	ERO,NSF
C...	202	59.09.0205	68 nF	Ce	ERO,NSF
EL...	03	54.02.0471	PTN 1-9	AMP Nr. 60800-1	
EL...	04	54.02.0471	PTN 1-9	AMP Nr. 60800-1	
J...	101	54.10.2027	10 pol.	Burndy Nr. GCSB 10 50 V1 K9	
J...	201	54.10.2027	10 pol.	Burndy Nr. GCSB 10 50 V1 K9	
L...	101	62.01.0128	1 mH	Goenda Nr. 16-10% or Delevan Nr. 2307-105	
L...	102	61.99.0126	1 mH	Interference-Bead	Ph
L...	103	62.01.0128	1 mH	Goenda Nr. 16-10% or Delevan Nr. 2307-105	
L...	104	61.99.0126	1 mH	Interference-Bead	Ph
L...	105	62.02.2122	1.2 mH	See note 1	
L...	106	61.02.2122	1.2 mH	See note 1	
L...	201	62.01.0128	1 mH	Goenda Nr. 16-10% or Delevan Nr. 2307-105	
L...	202	61.99.0126	1 mH	Interference-Bead	Ph
L...	203	62.01.0128	1 mH	Goenda Nr. 16-10% or Delevan Nr. 2307-105	
L...	204	61.99.0126	1 mH	Interference-Bead	Ph
L...	205	62.02.2122	1.2 mH	See note 1	
L...	206	62.02.2122	1.2 mH	See note 1	
R...	101	57.11.4101	100 Ohm		
R...	201	57.11.4101	100 Ohm		

S T U D E R 82/08/24 GAE CONNECTION BOARD 1.180.784.00 PAGE 1

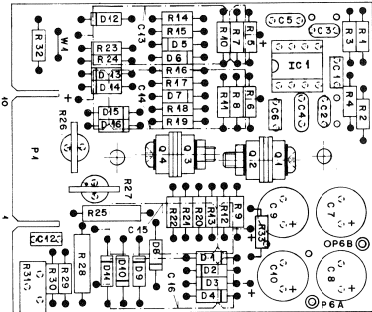
IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
Note 1 - TOK Nr. CSL 0812 - 122 J Oraloric Nr. K5D 5,5/9 RS 120UH+-5%					
Ce=Ceramic, PP=Polypropylen					
MANUFACTURER: ERO=Eröderstein, NSF=AEG-Telefunken-NSF, Ph=Philips, St=Studer.					

ORIG 82/07/29
S T U D E R 82/08/24 GAE CONNECTION BOARD 1.180.784.00 PAGE 2

L 101, 103, 201, 203 = 1mH J 101 = EL 05
L 105, 106, 205, 206 = 1.2mH J 201 = EL 06

* ALL OTHER DIAGRAMS ARE IDENTICAL WITH VU-METER PANEL
OUTPUT TRANSFORMERS:
(VU-METER UNIT 1.180.785-00/-81, VU-METER PANEL 1.180.775)

LINE AMPLIFIER 1.180.797

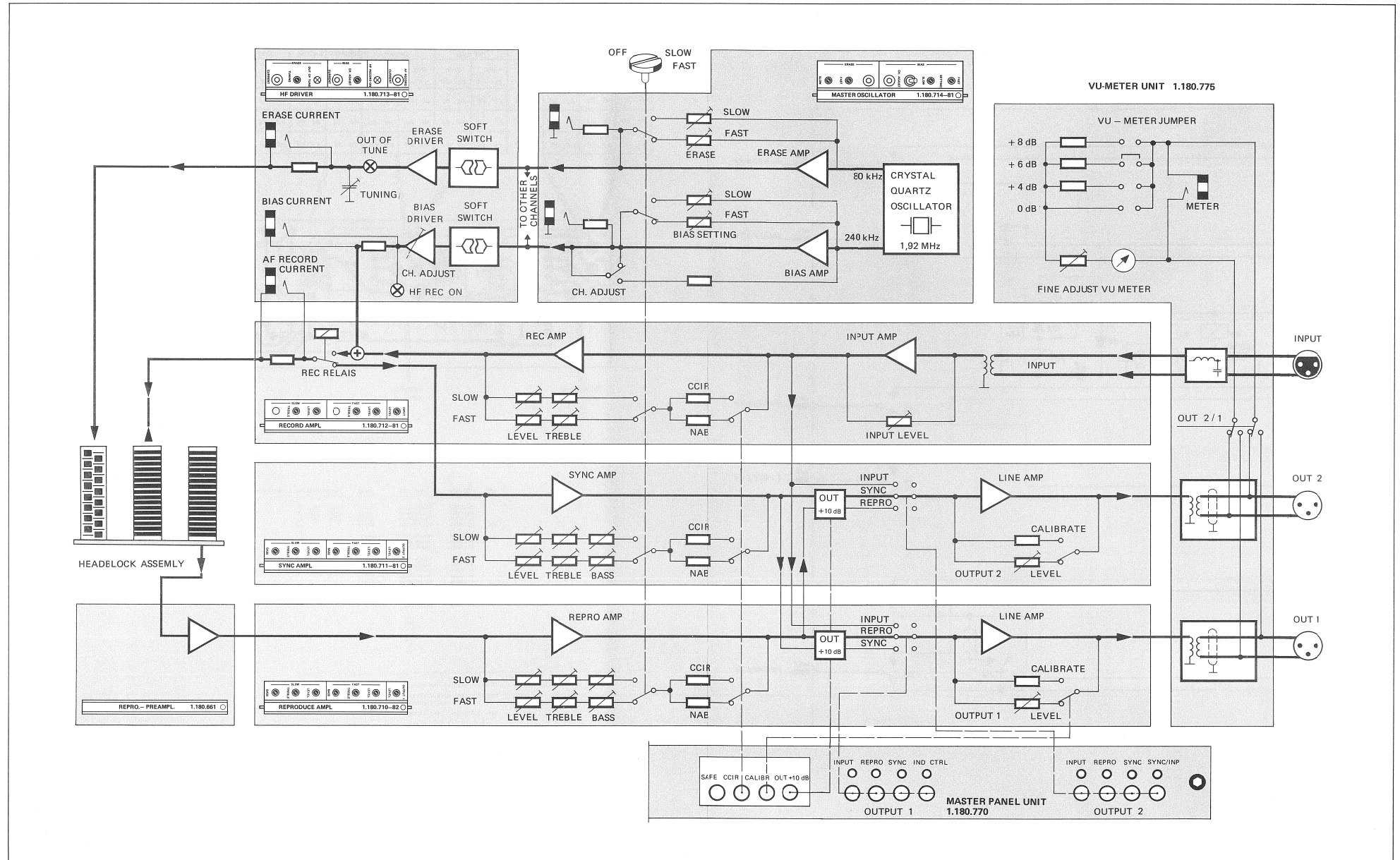


INT.	POS.+NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
	C+....1	50.99+0205	68 nF	C6	
	C+....2	50.99+0229	2+2 pF	C6	
	C+....3	50.99+0229	2+2 pF	C6	
	C+....4	50.99+0680	68 uF	501	PH
	C+....5	50.99+0680	68 uF	501	PH
	C+....6	50.99+0205	68 nF	C6	
	C+....7	50.22+0470	47 uF	40V, E1	
	C+....8	50.22+0470	47 uF	40V, E1	
	C+....9	50.22+0470	47 uF	40V, E1	
	C+....10	50.22+0470	47 uF	40V, E1	
	C+....11	50.00+0103	not used		
	C+....12	50.00+0103	10 uF	PETP	
(00)	C+....13	50.25+0471	470 uF	25V, E1	
(01)	C+....13	50.25+0471	470 uF	25V, E1	
(00)	C+....14	50.25+0471	470 uF	25V, E1	
(01)	C+....14	50.25+0471	470 uF	25V, E1	
	C+....15	50.25+1102	1 nF	6+3V, E1	
	C+....16	50.25+1102	1 nF	6+3V, E1	
	D+....1	50.04+0122	1N4001		Not-ITT
	D+....2	50.04+0122	1N4001		Not-ITT
	D+....3	50.04+0122	1N4001		Not-ITT
	D+....4	50.04+0122	1N4001		Not-ITT
	D+....5	50.04+0125	1N4448		PhxTr
	D+....6	50.04+0125	1N4448		PhxTr
	D+....7	50.04+0125	1N4448		PhxTr
	D+....8	50.04+0508	1N4935	1N4935, RG10	GL-Mot
	D+....9	50.04+0508	1N4935	1N4935, RG10	GL-Mot
	D+....10	50.04+0508	1N4935	1N4935, RG10	GL-Mot
	D+....11	50.04+0508	1N4935	1N4935, RG10	GL-Mot
	D+....12	50.04+0125	1N4448		PhxTr
	D+....13	50.04+0125	1N4448		PhxTr
	D+....14	50.04+0125	1N4448		PhxTr
	D+....15	50.04+0125	1N4448		PhxTr
	D+....16	50.04+0125	1N4448		PhxTr
	IC+....1	50.09+0106	NE5532AN	XR5532AN	ExeSio
S T U D E R (02) 85/02/96 GAE LINE AMPLIFIER BOARD 1.180.797.00 PAGE 1					

INT.	POS.+NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
	Ph+....A	54+02+0471	Pin	AMP Nr. 60809-1	
	Ph+....B	54+02+0471	Pin	AMP Nr. 60809-1	
	Q+....1	50.03+0451	80139-10	25C496-0+ NPN	Ph+SiexTfTo
	Q+....2	50.03+0451	80139-10	25C496-0+ NPN	Ph+SiexTfTo
	Q+....3	50.03+0452	80140-10	25A496-0+ PNP	Ph+SiexTfTo
	Q+....4	50.03+0452	80140-10	25A496-0+ PNP	Ph+SiexTfTo
	R+....1	57.11+3562	5+6 kOhm	1X	
	R+....2	57.11+3563	10 kOhm	1X	
	R+....3	57.11+3562	5+6 kOhm	1X	
	R+....4	57.11+3563	10 kOhm	1X	
	R+....5	57.11+3562	5+6 kOhm	1X	
	R+....6	57.11+3562	5+6 kOhm	1X	
	R+....7	57.11+4105	1 MOhm	2X	
	R+....8	57.11+3563	10 kOhm	1X	
	R+....9	57.11+4221	220 Ohm		
	R+....10	57.11+3563	10 kOhm	1X	
	R+....11	57.11+4105	1 MOhm	2X	
	R+....12	57.11+4479	4+7 Ohm		
	R+....13	57.11+4479	4+7 Ohm		
	R+....14	57.11+0682	6+8 kOhm		
	R+....15	57.11+4102	1 kOhm		
	R+....16	57.11+0682	6+8 kOhm		
	R+....17	57.11+4102	1 kOhm		
	R+....18	57.11+0682	6+8 kOhm		
	R+....19	57.11+4102	1 kOhm		
	R+....20	57.11+4221	220 Ohm		
	R+....21	57.11+4479	4+7 Ohm		
	R+....22	57.11+4479	4+7 Ohm		
	R+....23	57.11+0682	6+8 kOhm		
	R+....24	57.11+4102	1 kOhm		
	R+....25	57.11+4220	22 Ohm	0.5 W	
	R+....26	57.09+0209	5+6 Ohm	PTC See note 1	
	R+....27	57.09+0209	5+6 Ohm	PTC See note 1	
	R+....28	57.11+4220	22 Ohm	0.5 W	
	R+....29	57.11+4102	1+2 kOhm		
S T U D E R (02) 85/02/96 GAE LINE AMPLIFIER BOARD 1.180.797.00 PAGE 2					

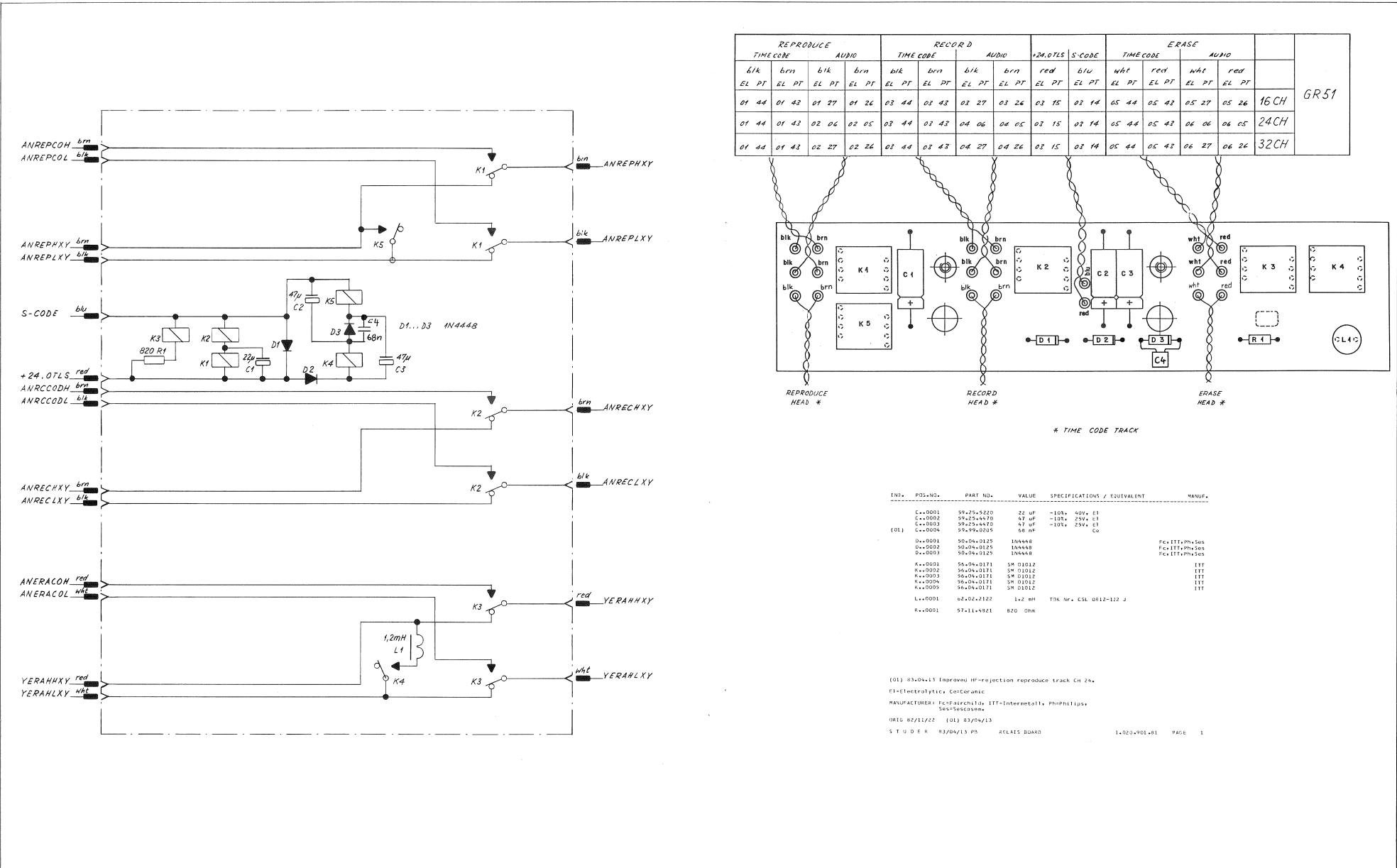
INT.	POS.+NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
	R+....30	57.11+3101	100 Ohm		
	R+....31	58.01+7102	1 kOhm	See note 2	
	R+....32	57.11+4222	2+2 kOhm		
(02)	R+....33	57.11+4392	3+9 kOhm		
	R+....01	1+010+321+64		wire bridge	
(01) 84-03-22 Improved reliability					
(02) 85-02+06 Improved adjust. range of symmetry control					
Note 1 - Philips Nr. 2122 662 91005					
Note 2 - 1 kOhm Potentiometer lin. 10L					
Journs Nr. 3350 lin. 10L					
Diplomatic Nr. 361 18/525+633 10L					
Cap=Ceramic, El=Electrolytic, PETP=Polyester, Sol=Solid aluminium					
Manufacturer: Ex=Exar, GL=General Instruments, ITT=Intermetal					
Mos=Motorola, Ph=Philips, Sem=Semiconduct					
Si=Siemens, Sig=Signetics, TFI=Telefunken					
T=Texas Instruments, Tr=Transilux, Tr=Transitron					
DRIS 82/07/30 (01) 84/01/27 (02) 85/01/08					
S T U D E R (02) 85/02/96 GAE LINE AMPLIFIER BOARD 1.180.797.00 PAGE 3					

AUDIO SIGNAL FOLLOW FOR ONE CHANNEL



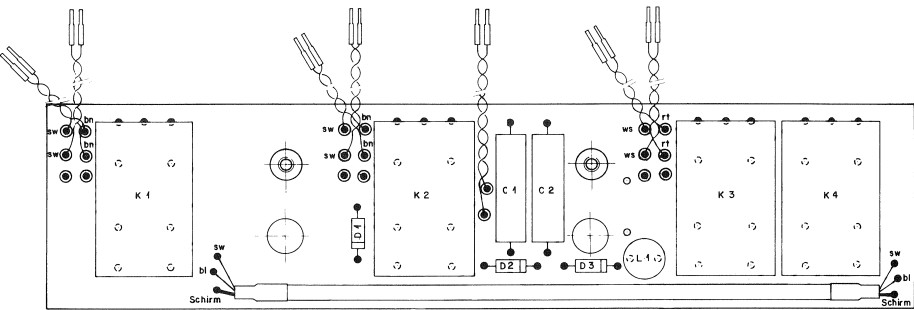
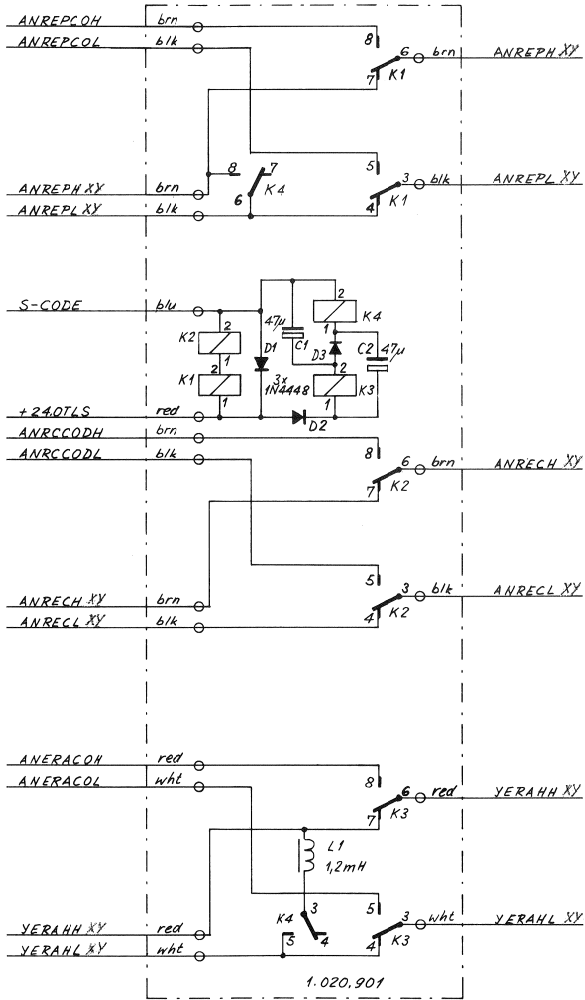
1.020.901-81
GR51

RELAIS PCB OF HEAD BLOCK ASSEMBLY 1.020.901-81 GR51



RELAYS BOARD OF HEAD BLOCK ASSEMBLY 1.020.901-00

1.020.901-00
GR51



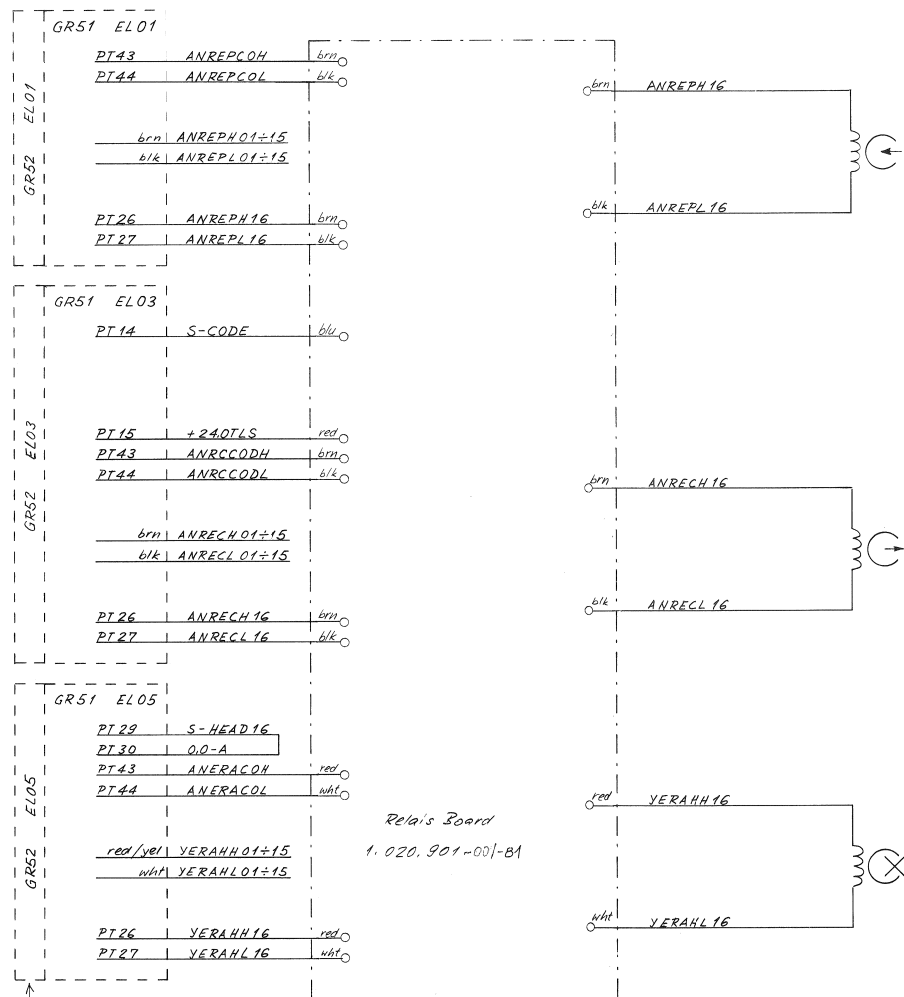
INDI POS NO	PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MFR
C 01	SR25.4470	47pF	20%	20 F
C 02	SR25.4470	47pF	20%	20 F
D 01	50.04.0125	1N4448		
D 02	50.04.0125	1N4448		
D 03	50.04.0125	1N4448		
E 01	56.04.0140	AE 1202	NP 2-12V	Ng
E 02	56.04.0140	AE 1202	NP 2-12V	Ng
E 03	56.04.0140	AE 1202	NP 2-12V	Ng
E 04	56.04.0140	AE 1202	NP 2-12V	Ng
L 01	62.02.2122	1.2 mH	CSL 0812-122-2	TDK

INDI	DATE	NAME
①		
②		
③		
④		
⑤	19.2.79	Erdoğan
STUDER	Relay Board	1.020.901
		PAGE 1 OF 1

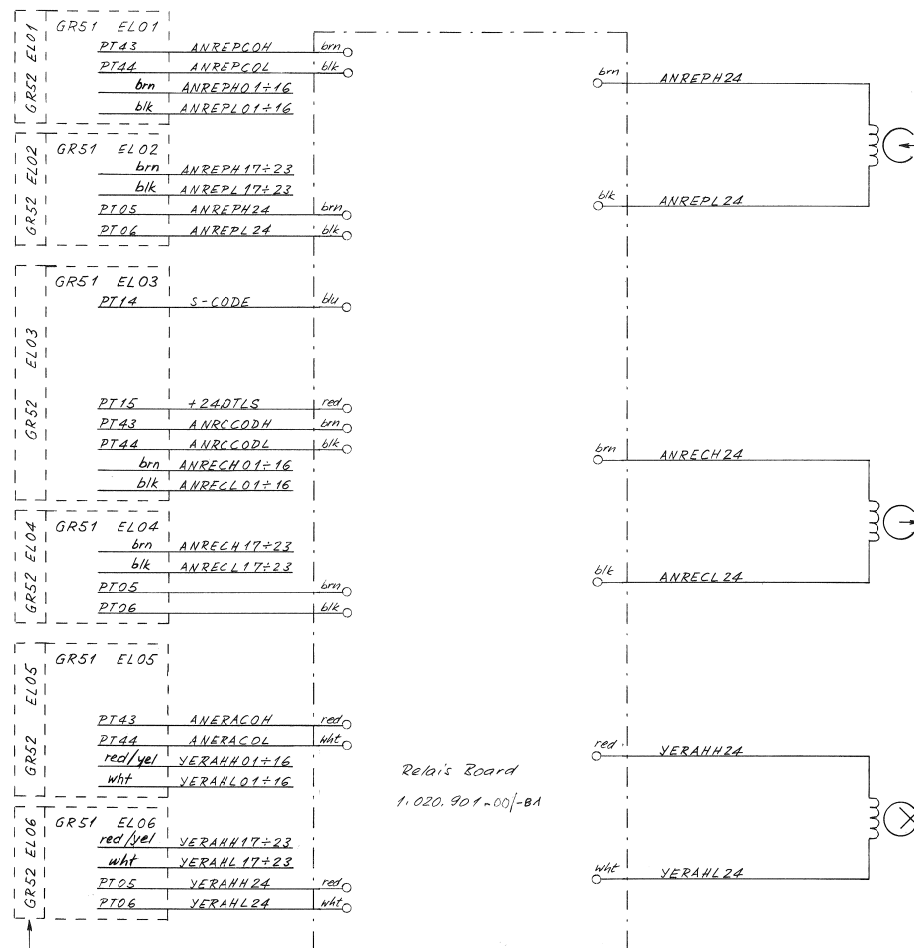
HEAD BLOCK ASSEMBLY 16CH TLS VERSION 1.020.793 GR51

1.020.793
GR51

HEAD BLOCK ASSEMBLY 24CH TLS VERSION 1.020.794 GR51

1.020.794
GR51

Note Location Pin List Gr 52

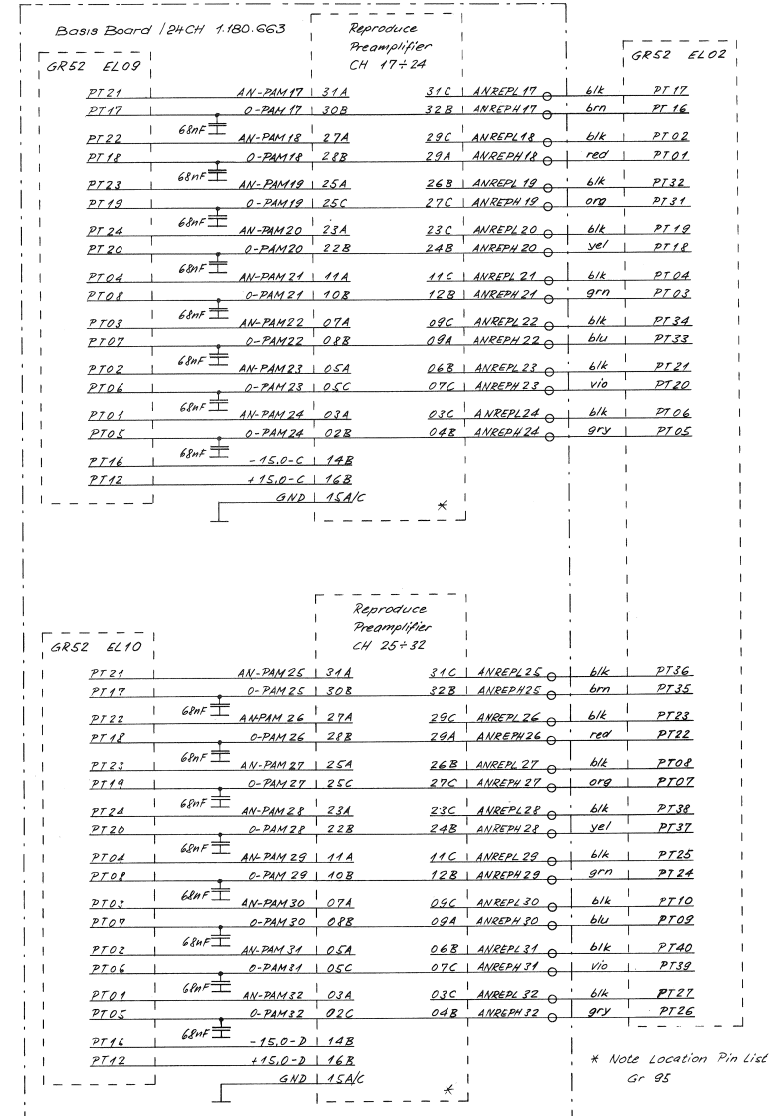
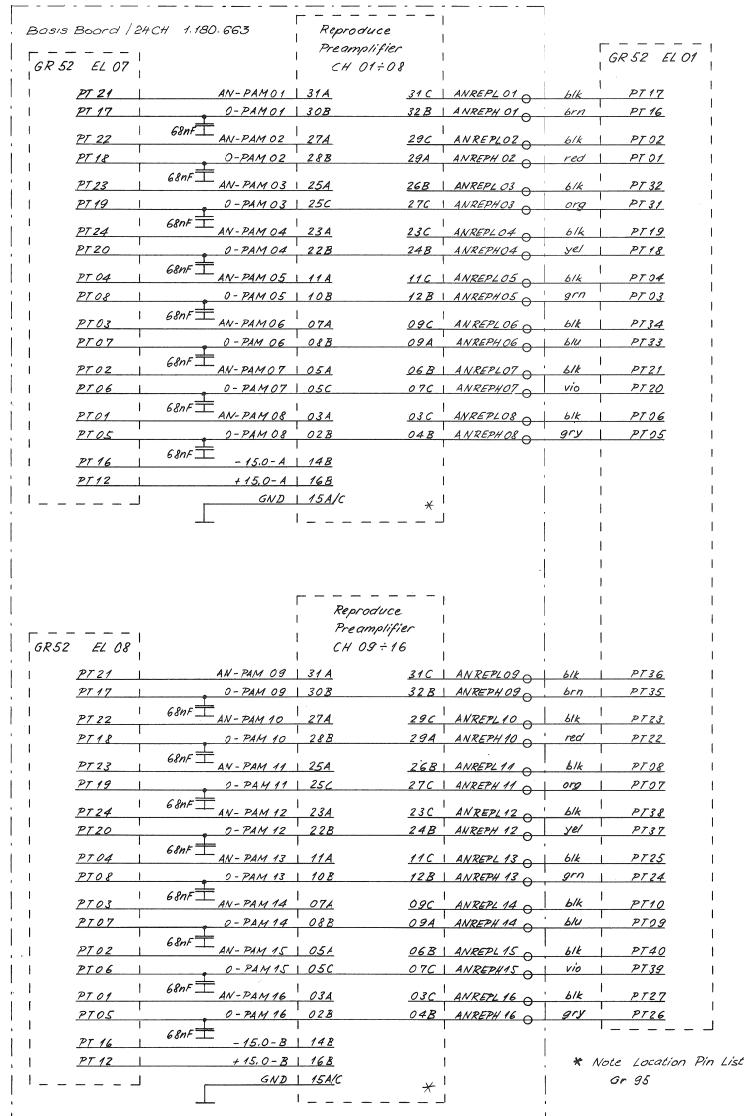


Note Location Pin List Gr 52

1.180.652 ... 654

GR52

PREAMPLIFIER UNIT / BASIS BOARD 16/32CH 1.180.652 ... 654 GR52



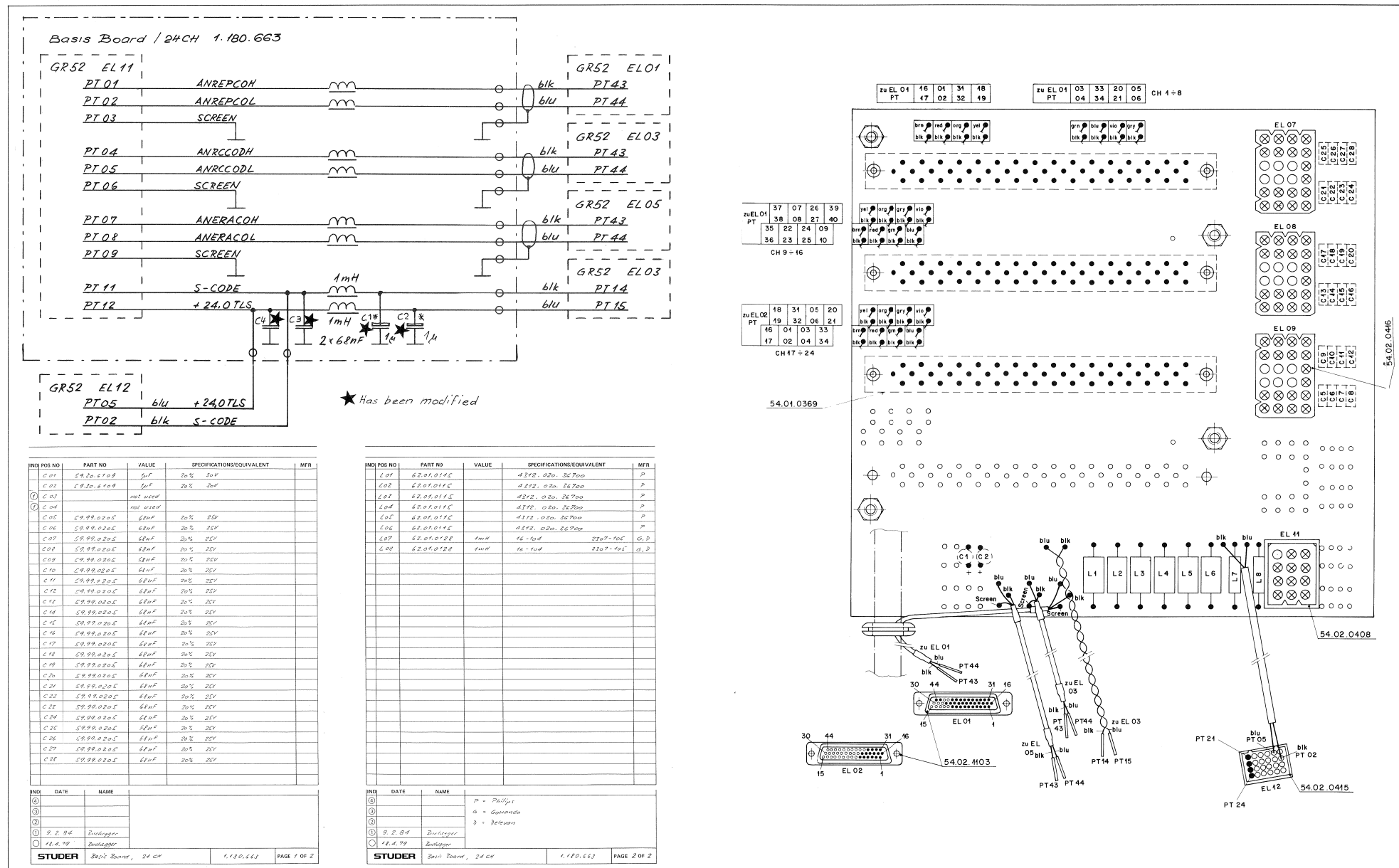
1.180.652 ... 654

1.180.663

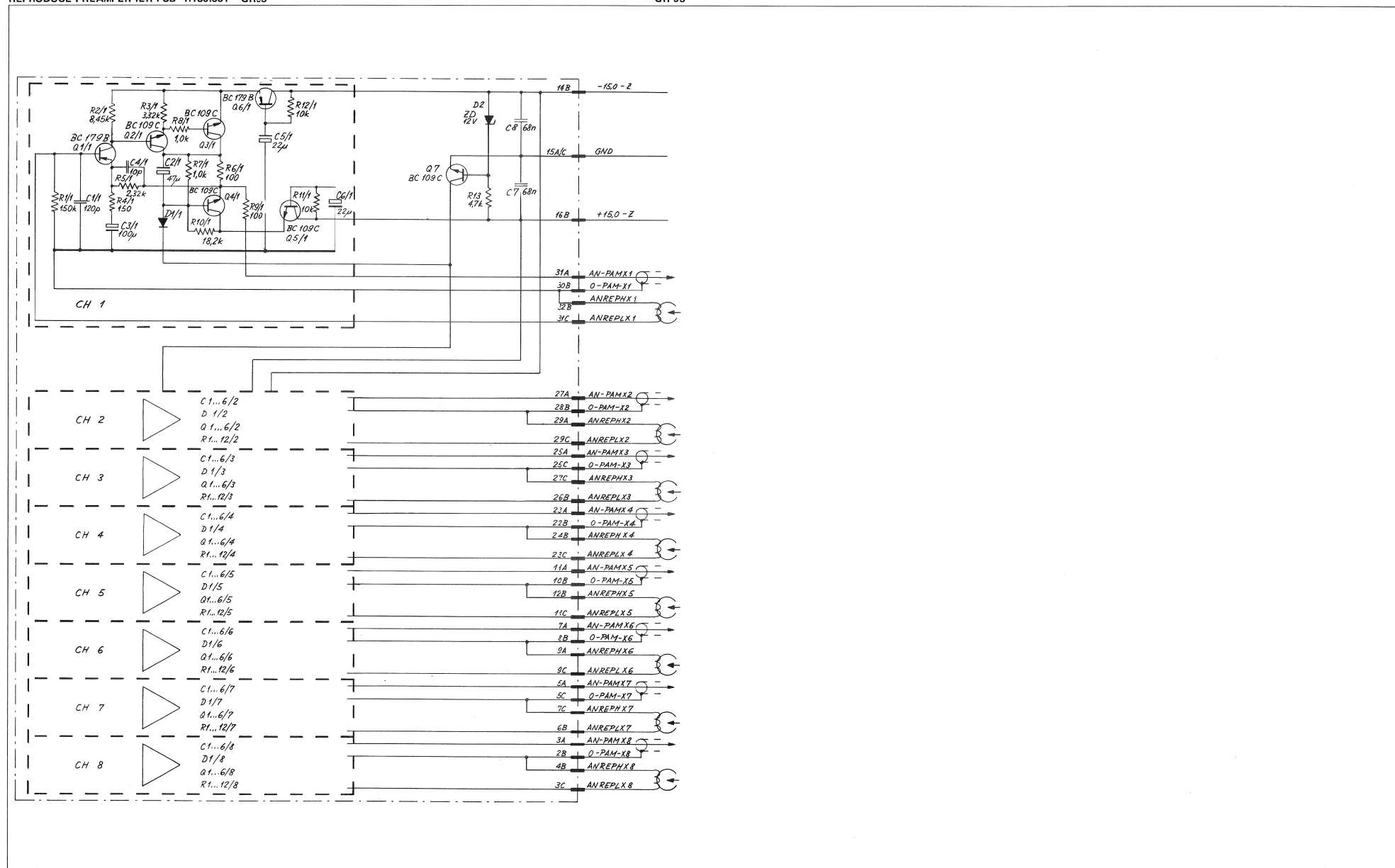
GR52

PREAMPLIFIER UNIT / BASIS BOARD 16/32CH 1.180.652 ... 654 GR52

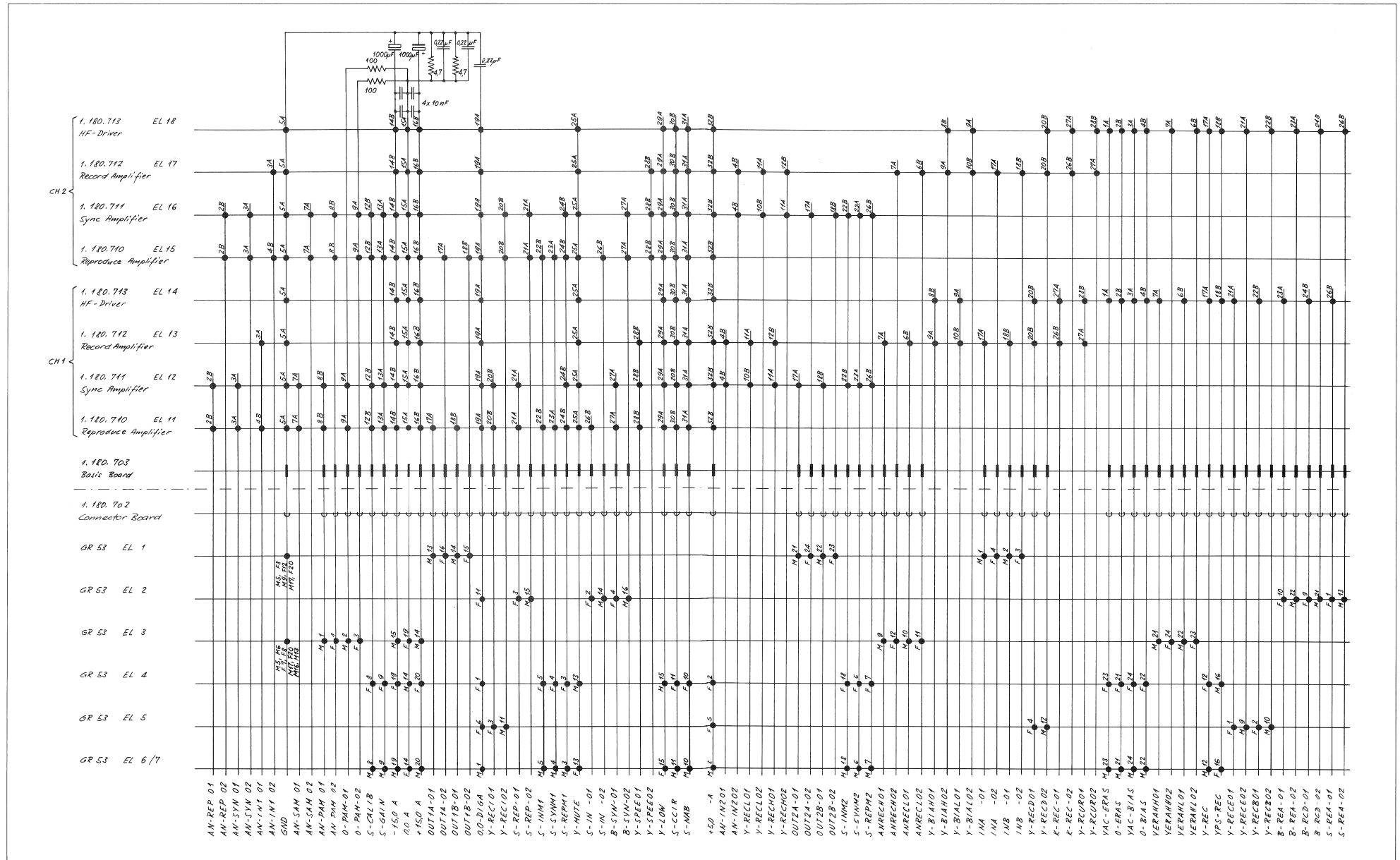
BASIS BOARD 24CH 1.180.663



REPRODUCE PREAMPLIFIER PCB 1.180.661 GR95

1.180.661
GR 95

BASIS UNIT AUDIO CARDS 1.180.701 GR53 ... 64

1.180.701
GR53 ... 64

CONNECTOR BOARD 1.180.702 GR53 ... 64

1.180.702
GR53 ... 64

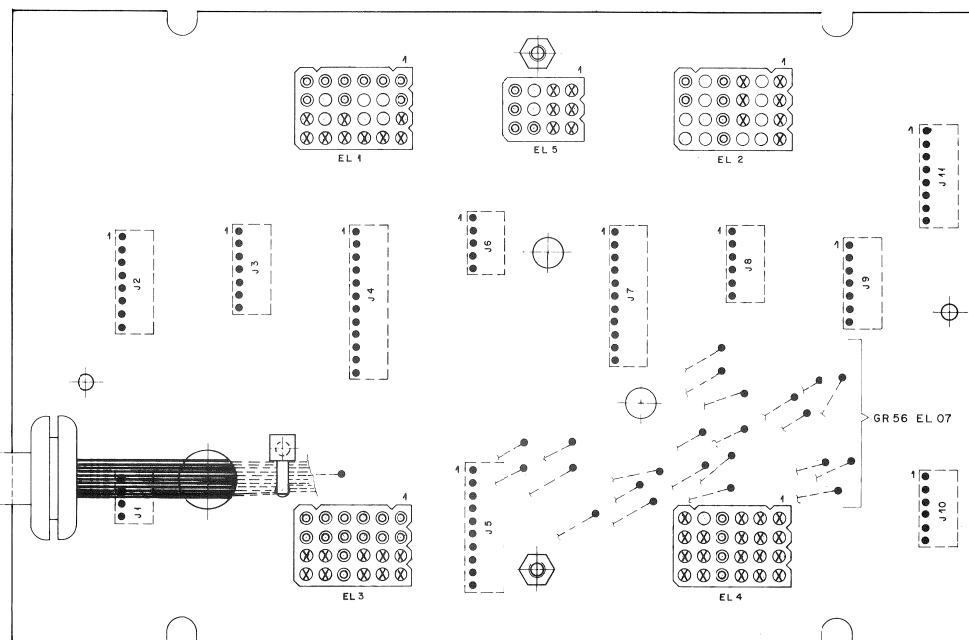
⊙ 54.02.0406

⊗ 54.02.0407

J1 = 54.04.0244
 J2, J11 = 54.04.0289
 J3, J9 = 54.04.0218
 J4 = 54.04.0215
 J5 = 54.04.0290
 J6 = 54.04.0288
 J7 = 54.04.0291
 J8, J10 = 54.04.0216

54.02.0415

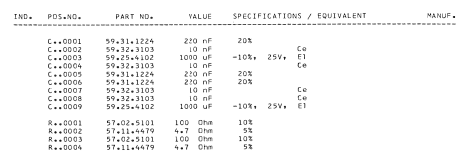
* GR 56 EL 06



PRODUKTIONS-VERBANDTUNGS-LISTE *** 1.180.702.00 *** END-DAT. 78/02/06-0 SEITE 1
 LITZENSCHLÜSSEL-VERBANDTUNGS-LISTE *****
 LITZENSCHLÜSSEL-VERBANDTUNGS-LISTE ***** 78/02/06-0 09159 TOTAL 1 SEITE

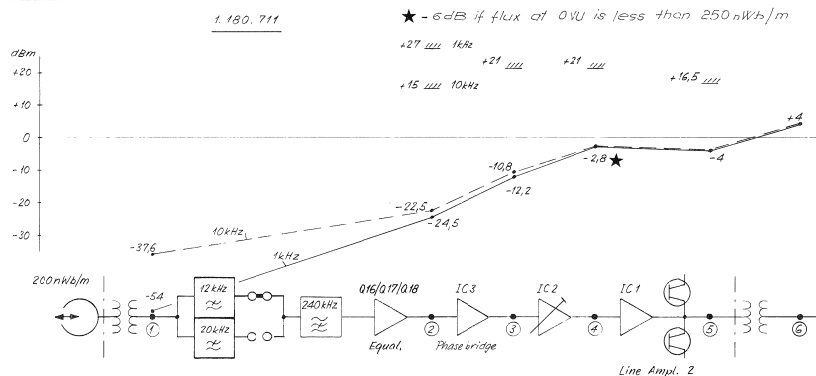
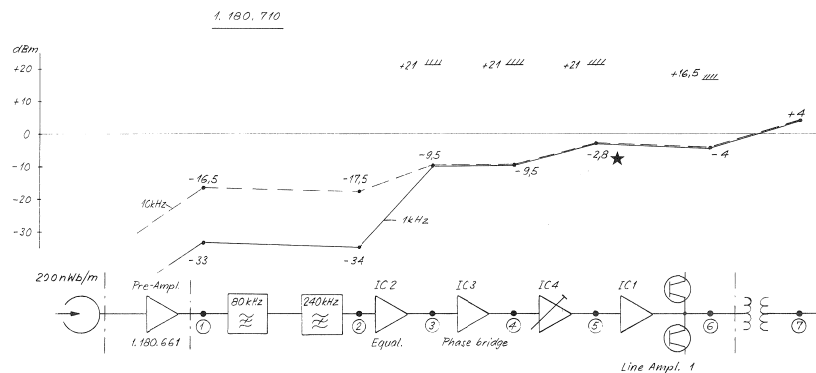
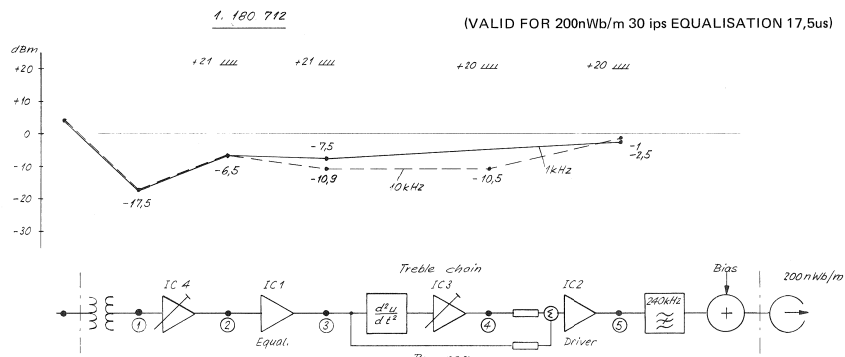
DRHT	BAUTEIL-NR.	POSITIONS-NR.	LEGENDE	FARBE	VERBANDTUNGS-ORT 1	VERBANDTUNGS-ORT 2	SIGNAL-NR.	BEMERKUNGEN
10	1.180.702.020200	240	GR	M	56.03.01	U	56.07.01	0-0-10-0
20	1.180.702.020200	240	GR	M	56.03.02	U	56.07.02	0-0-10-0
30	1.180.702.020200	240	GR	M	56.03.03	U	56.07.03	0-0-10-0
40	1.180.702.020200	240	GR	M	56.03.04	U	56.07.04	0-0-10-0
50	1.180.702.020200	240	GR	M	56.03.05	U	56.07.05	0-0-10-0
60	1.180.702.020200	240	GR	M	56.03.06	U	56.07.06	0-0-10-0
70	1.180.702.020200	240	GR	M	56.03.07	U	56.07.07	0-0-10-0
80	1.180.702.020200	240	GR	M	56.03.08	U	56.07.08	0-0-10-0
90	1.180.702.020200	240	GR	M	56.03.09	U	56.07.09	0-0-10-0
100	1.180.702.020200	240	GR	M	56.03.10	U	56.07.10	0-0-10-0
110	1.180.702.020200	240	GR	M	56.03.11	U	56.07.11	0-0-10-0
120	1.180.702.020200	240	GR	M	56.03.12	U	56.07.12	0-0-10-0
130	1.180.702.020200	240	GR	M	56.03.13	U	56.07.13	0-0-10-0
140	1.180.702.020200	240	GR	M	56.03.14	U	56.07.14	0-0-10-0
150	1.180.702.020200	240	GR	M	56.03.15	U	56.07.15	0-0-10-0
160	1.180.702.020200	240	GR	M	56.03.16	U	56.07.16	0-0-10-0
170	1.180.702.020200	240	GR	M	56.03.17	U	56.07.17	0-0-10-0
180	1.180.702.020200	240	GR	M	56.03.18	U	56.07.18	0-0-10-0
190	1.180.702.020200	240	GR	M	56.03.19	U	56.07.19	0-0-10-0
200	1.180.702.020200	240	GR	M	56.03.20	U	56.07.20	0-0-10-0
210	1.180.702.020200	240	GR	M	56.03.21	U	56.07.21	0-0-10-0
220	1.180.702.020200	240	GR	M	56.03.22	U	56.07.22	0-0-10-0
230	1.180.702.020200	240	GR	M	56.03.23	U	56.07.23	0-0-10-0
240	1.180.702.020200	240	GR	M	56.03.24	U	56.07.24	0-0-10-0

1.180.703
GR53 ... 64



1.180.703.00 PAGE 1

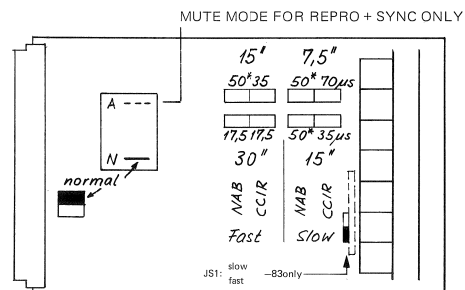
LEVEL DIAGRAM / AUDIO



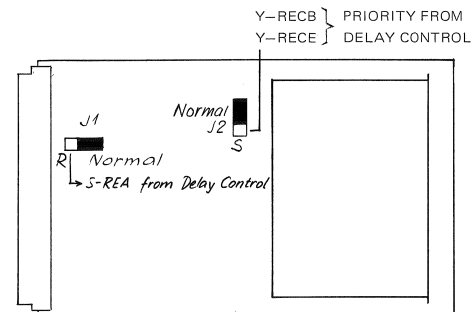
JUMPER POSITION ON AUDIO PC-BOARDS

1.180.710(-82/-83) REPRODUCE AMPLIFIER PCB

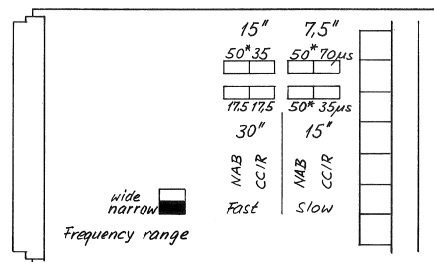
1.180.710-81 :
REPRODUCE AMPLIFIER PCB
WITHOUT MUTE MODE MODIFICATION.



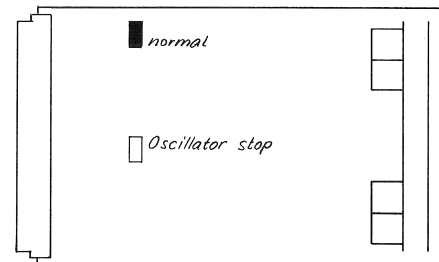
1.180.713-81 HF-DRIVER PCB



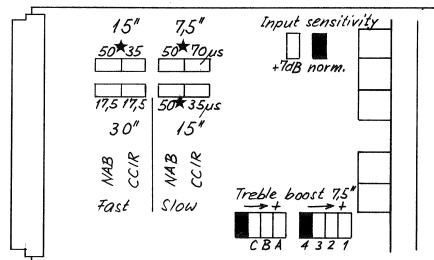
1.180.711(-81/-82) SYNC AMPLIFIER PCB



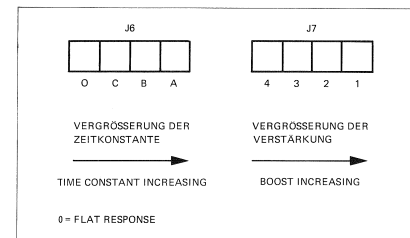
1.180.714(-81) MASTER OSCILLATOR PCB



1.180.712/715 RECORD AMPLIFIER PCB

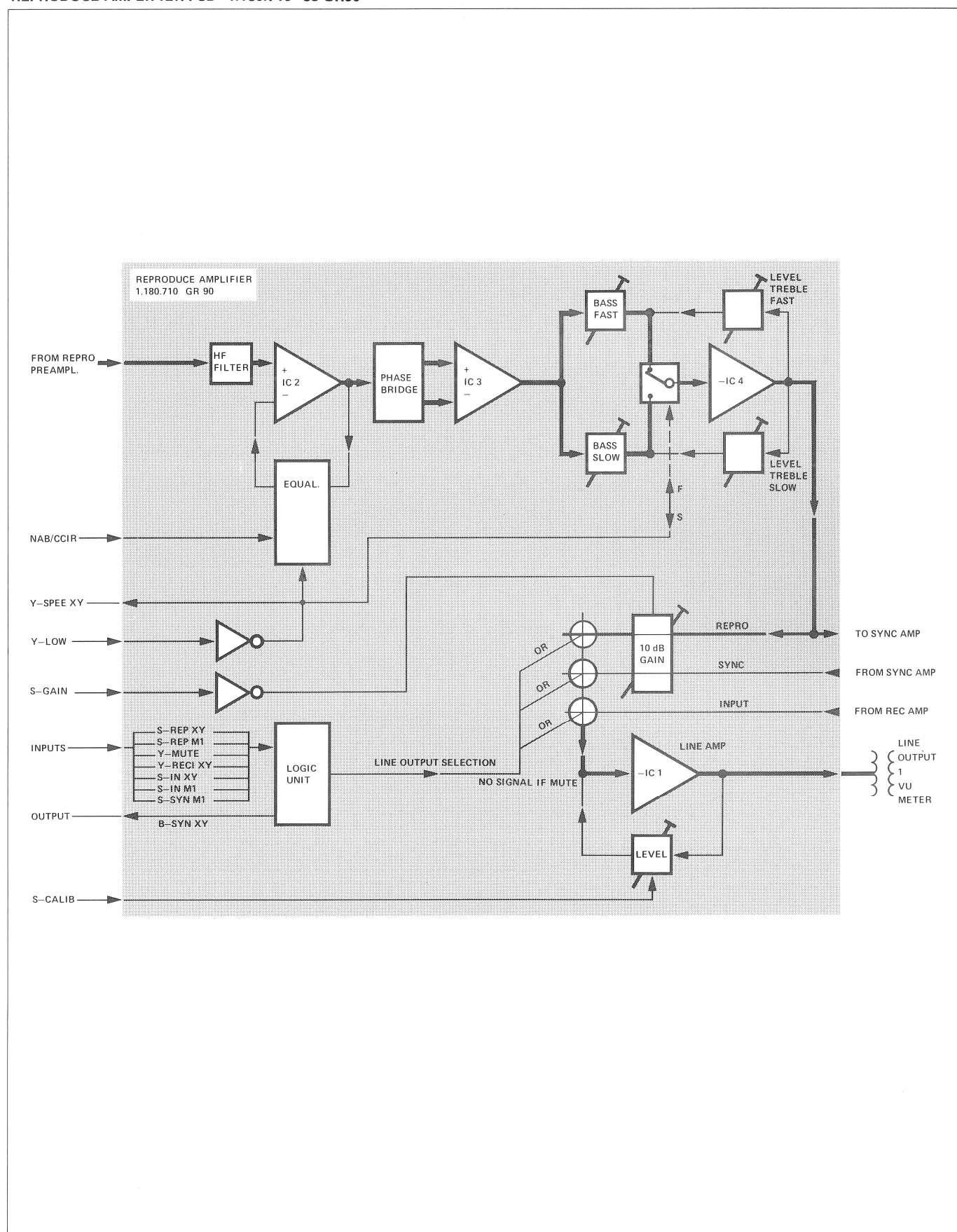


★ NAB EQUALIZATION 50μs; 3180μs

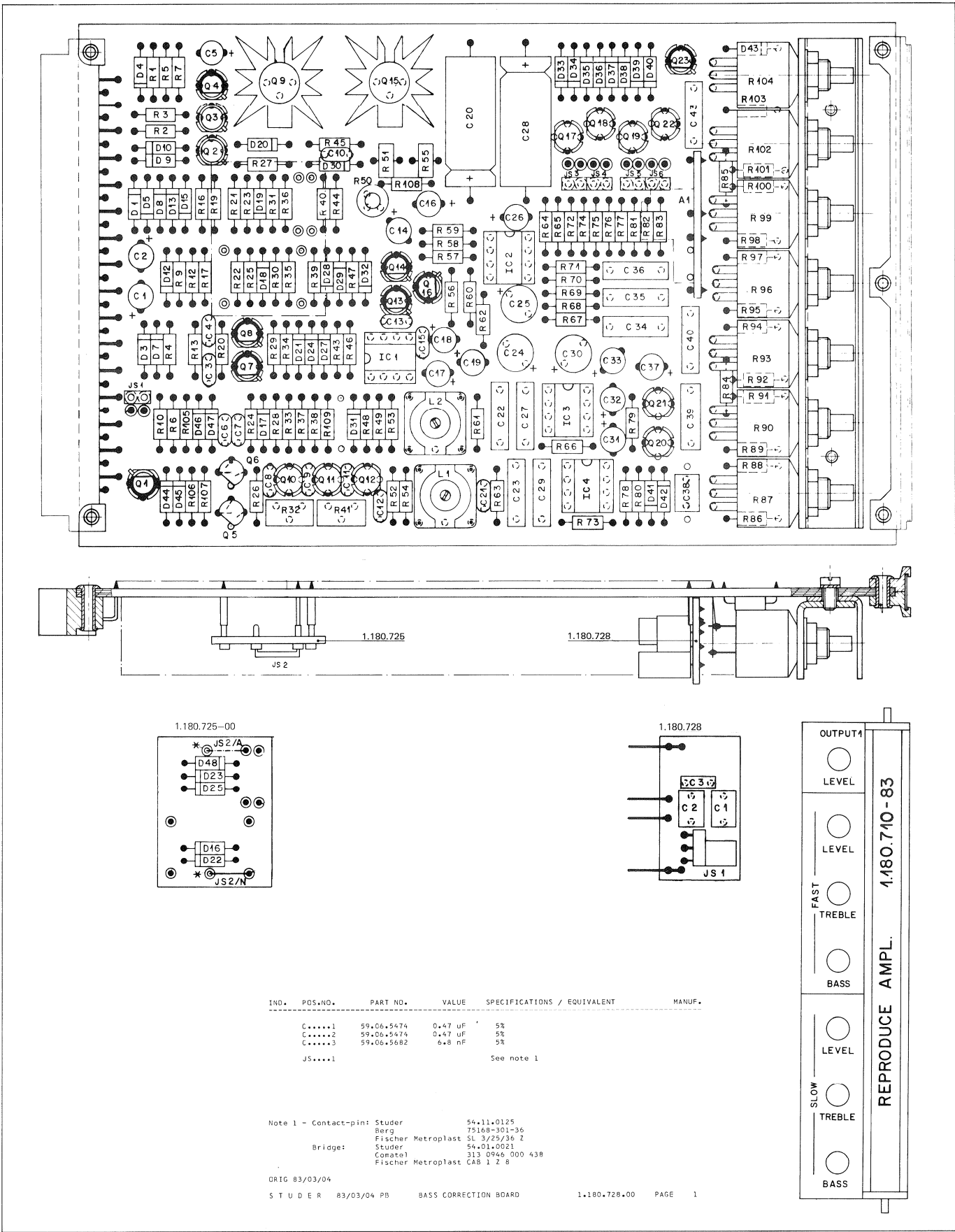


1.180.710-83
GR90

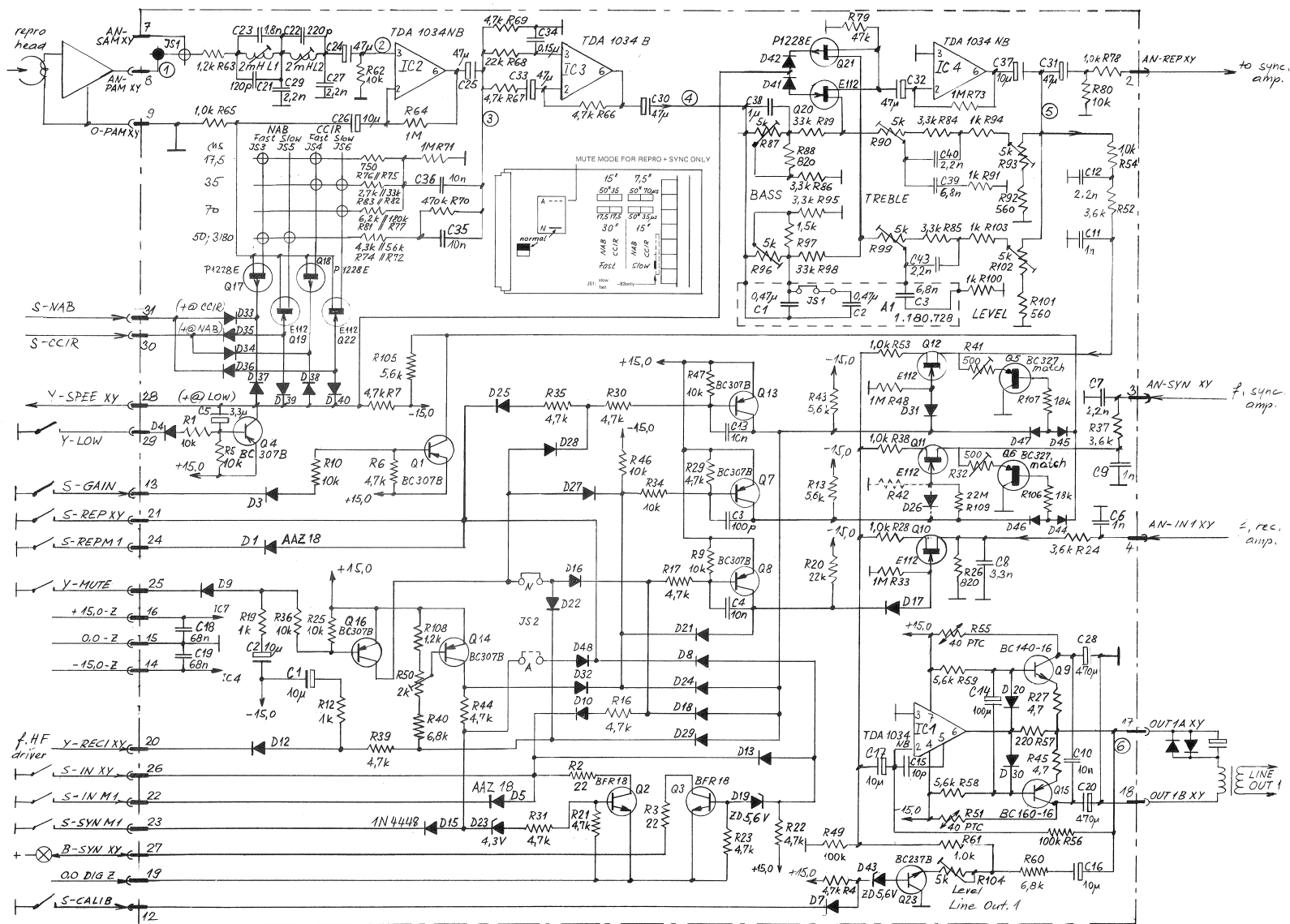
REPRODUCE AMPLIFIER PCB 1.180.710-83 GR90



REPRODUCE AMPLIFIER PCB 1.180.710-83 GR90



REPRODUCE AMPLIFIER PCB 1.180.710-83 GR90

1.180.710-83
GR90

REPRODUCE AMPLIFIER PCB 1.180.710-83 GR90

1.180.710-83
GR90

IND.	POS.Nº.	PART Nº.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.	IND.	POS.Nº.	PART Nº.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
1.180.710-80 Basic correction board											
Cxxxx1	59-22-0100	10 uF	20%, 35V, EI			Qxxxx2	50-03-0434	0FR18		SGS	
Cxxxx2	59-22-0100	10 uF	20%, 35V, EI			Qxxxx3	50-03-0434	0FR18		SGS	
Cxxxx3	59-24-0101	100 pF	5%, Co			Qxxxx4	50-03-0515	BC807B	IC2519/IC2570	ITT-SiemMot+Phy+Tt	Si
Cxxxx4	59-32-3103	10 uF	+80%, Co			Qxxxx5	50-03-0624	BC127match		Si	
Cxxxx5	59-32-3103	10 uF	+80%, Co			Qxxxx6	50-03-0607	BC127match		Si	
Cxxxx6	59-32-0102	4 uF	20%			Qxxxx7	50-03-0515	BC807B	IC2519/IC2570	ITT-SiemMot+Phy+Tt	Si
Cxxxx7	59-32-0222	2.2 uF	20%			Qxxxx8	50-03-0515	BC807B	IC2519/IC2570	ITT-SiemMot+Phy+Tt	Si
Cxxxx8	59-32-2332	3.3 uF	20%			Qxxxx9	50-03-0316	BC140-16		Si	
Cxxxx9	59-32-0102	4 uF	20%			Qxxxx10	50-03-0316	BC140-16		Si	
Cxxxx10	59-32-0103	10 uF	+80%, Co			Qxxxx11	50-03-0316	BC140-16		Si	
Cxxxx11	59-32-0103	10 uF	+80%, Co			Qxxxx12	50-03-0316	BC140-16		Si	
Cxxxx12	59-22-0222	2.2 uF	20%			Qxxxx13	50-03-0515	BC807B	IC2519/IC2570	ITT-SiemMot+Phy+Tt	Si
Cxxxx13	59-32-3103	10 uF	+80%, Co			Qxxxx14	50-03-0515	BC807B	IC2519/IC2570	ITT-SiemMot+Phy+Tt	Si
Cxxxx14	59-22-0101	100 uF	20%, EI			Qxxxx15	50-03-0315	BC100-16		Si	
Cxxxx15	59-34-1100	10 pF	20%, Co			Qxxxx16	50-03-0315	BC100-16		Si	
Cxxxx16	59-26-2100	10 uF	20%, Sal	Ph		Qxxxx17	50-03-0329	P1228E		Ph	
Cxxxx17	59-26-2100	10 uF	20%, Sal	Ph		Qxxxx18	50-03-0329	P1228E		Ph	
Cxxxx18	59-26-2100	10 uF	20%, Sal	Ph		Qxxxx19	50-03-0329	P1228E		Ph	
Cxxxx19	59-26-2100	10 uF	20%, Sal	Ph		Qxxxx20	50-03-0329	P1228E		Ph	
Cxxxx20	59-26-2100	10 uF	20%, Sal	Ph		Qxxxx21	50-03-0329	P1228E		Ph	
Cxxxx21	59-26-2100	10 uF	20%, Sal	Ph		Qxxxx22	50-03-0329	P1228E		Ph	
Cxxxx22	59-26-2100	10 uF	20%, Sal	Ph		Qxxxx23	50-03-0329	P1228E		Ph	
Cxxxx23	59-26-2100	10 uF	20%, Sal	Ph		Qxxxx24	50-03-0329	P1228E		Ph	
Cxxxx24	59-26-2100	10 uF	20%, Sal	Ph		Qxxxx25	50-03-0329	P1228E		Ph	
Cxxxx25	59-26-2100	10 uF	20%, Sal	Ph		Qxxxx26	50-03-0329	P1228E		Ph	
Cxxxx26	59-26-2100	10 uF	20%, Sal	Ph		Qxxxx27	59-26-2100	10 uF	20%, Sal	Ph	
Cxxxx27	59-26-2100	10 uF	20%, Sal	Ph		Cxxxx28	59-26-2100	10 uF	20%, Sal	Ph	
Cxxxx28	59-26-2100	10 uF	20%, Sal	Ph		Cxxxx29	59-26-2100	10 uF	20%, Sal	Ph	
Cxxxx29	59-26-2100	10 uF	20%, Sal	Ph		Cxxxx30	59-26-2100	10 uF	20%, Sal	Ph	
Cxxxx30	59-26-2100	10 uF	20%, Sal	Ph		Cxxxx31	59-26-2100	10 uF	20%, Sal	Ph	
Cxxxx31	59-26-2100	10 uF	20%, Sal	Ph		Cxxxx32	59-26-2100	10 uF	20%, Sal	Ph	
Cxxxx32	59-26-2100	10 uF	20%, Sal	Ph		Cxxxx33	59-26-2100	10 uF	20%, Sal	Ph	
Cxxxx33	59-26-2100	10 uF	20%, Sal	Ph		Cxxxx34	59-26-2100	10 uF	20%, Sal	Ph	
Cxxxx34	59-26-2100	10 uF	20%, Sal	Ph		Cxxxx35	59-26-2100	10 uF	20%, Sal	Ph	
Cxxxx35	59-26-2100	10 uF	20%, Sal	Ph							

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IND.	POS.Nº.	PART Nº.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.	IND.	POS.Nº.	PART Nº.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
Cxxxx16	59-11-0103	10 nF	2.5%			Rxxxx15	57-1-4103	10 kOhm	5%		
Cxxxx17	59-26-2100	10 uF	20%, Sal	Ph		Rxxxx16	57-1-4220	22 Ohm	5%		
Cxxxx18	59-09-0105	1 uF	5%			Rxxxx17	57-1-4220	22 Ohm	5%		
Cxxxx19	59-11-3602	0.6 nF	5%			Rxxxx18	57-1-4220	22 Ohm	5%		
Cxxxx20	59-11-0222	2.2 nF	5%			Rxxxx19	57-1-4220	22 Ohm	5%		
Cxxxx21	not used					Rxxxx20	57-1-4220	22 Ohm	5%		
Cxxxx22	not used					Rxxxx21	57-1-4220	22 Ohm	5%		
Cxxxx23	59-11-0222	2.2 nF	5%			Rxxxx22	57-1-4220	22 Ohm	5%		
Dxxxx1	50-04-0127	8AT 85	8AS 40-02x 8AZ 18	PhxSio		Rxxxx23	57-1-4220	22 Ohm	5%		
Dxxxx2	not used					Rxxxx24	57-1-4220	22 Ohm	5%		
Dxxxx3	50-04-0125	184448		PhxSio		Rxxxx25	57-1-4220	22 Ohm	5%		
Dxxxx4	50-04-0125	184448		PhxSio		Rxxxx26	57-1-4220	22 Ohm	5%		
Dxxxx5	50-04-0127	8AT 85	8AS 40-02x 8AZ 18	PhxSio		Rxxxx27	57-1-4220	22 Ohm	5%		
Dxxxx6	not used					Rxxxx28	57-1-4220	22 Ohm	5%		
Dxxxx7	50-04-0125	184448		PhxSio		Rxxxx29	57-1-4220	22 Ohm	5%		
Dxxxx8	50-04-0125	184448		PhxSio		Rxxxx30	57-1-4220	22 Ohm	5%		
Dxxxx9	50-04-0125	184448		PhxSio		Rxxxx31	57-1-4220	22 Ohm	5%		
Dxxxx10	50-04-0125	184448		PhxSio		Rxxxx32	57-1-4220	22 Ohm	5%		
Dxxxx11	not used					Rxxxx33	57-1-4220	22 Ohm	5%		
Dxxxx12	50-04-0125	184448		PhxSio		Rxxxx34	57-1-4220	22 Ohm	5%		
Dxxxx13	50-04-0125	184448		PhxSio		Rxxxx35	57-1-4220	22 Ohm	5%		
Dxxxx14	not used					Rxxxx36	57-1-4220	22 Ohm	5%		
Dxxxx15	50-04-0125	184448		PhxSio		Rxxxx37	57-1-4220	22 Ohm	5%		
Dxxxx16	50-04-0125	184448		PhxSio		Rxxxx38	57-1-4220	22 Ohm	5%		
Dxxxx17	50-04-0125	184448		PhxSio		Rxxxx39	57-1-4220	22 Ohm	5%		
Dxxxx18	50-04-0125	184448		PhxSio		Rxxxx40	57-1-4220	22 Ohm	5%		
Dxxxx19	50-04-0125	184448		PhxSio		Rxxxx41	57-1-4220	22 Ohm	5%		
Dxxxx20	50-04-0125	184448		PhxSio		Rxxxx42	57-1-4220	22 Ohm	5%		
Dxxxx21	50-04-0125	184448		PhxSio		Rxxxx43	57-1-4220	22 Ohm	5%		
Dxxxx22	50-04-0125	184448		PhxSio		Rxxxx44	57-1-4220	22 Ohm	5%		
Dxxxx23	50-04-0125	184448		PhxSio		Rxxxx45	57-1-4220	22 Ohm	5%		
Dxxxx24	50-04-0125	184448		PhxSio		Rxxxx46	57-1-4220	22 Ohm	5%		
Dxxxx25	50-04-0125	184448		PhxSio		Rxxxx47	57-1-4220	22 Ohm	5%		
Dxxxx26	50-04-0125	184448		PhxSio		Rxxxx48	57-1-4220	22 Ohm	5%		
Dxxxx27	50-04-0125	184448		PhxSio		Rxxxx49	57-1-4220	22 Ohm	5%		
Dxxxx28	50-04-0125	184448		PhxSio		Rxxxx50	57-1-4220	22 Ohm	5%		
Dxxxx29	50-04-0125	184448		PhxSio		Rxxxx51	57-1-4220	22 Ohm	5%		
Dxxxx30	50-04-0125	184448		PhxSio							

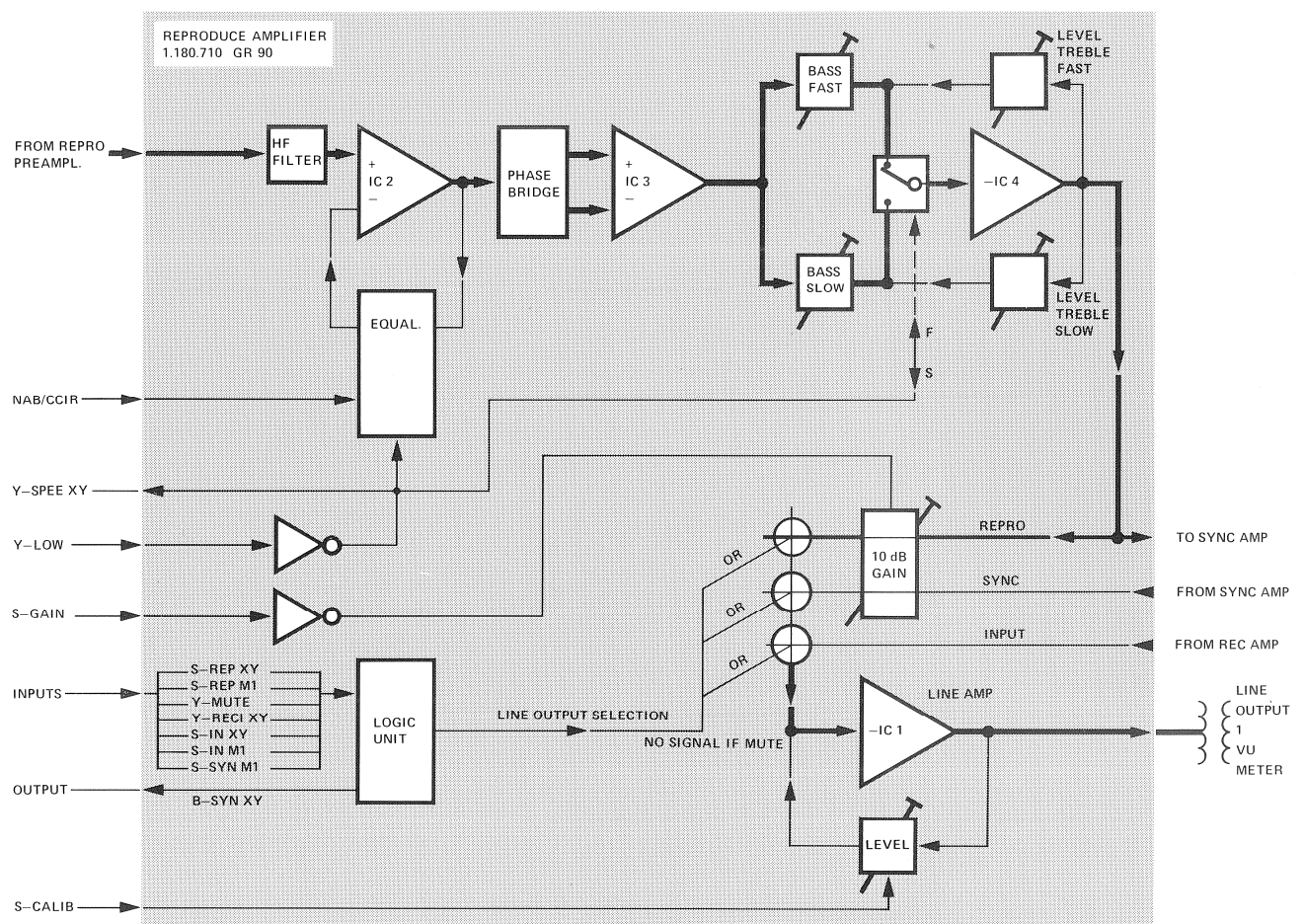
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	POS.Nº.	PART Nº.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.	IND.	POS.Nº.	PART Nº.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
Dxxxx29	50-04-0124	184448		PhxSio		Rxxxx52	57-1-4362	3.6 kOhm	1%		
Dxxxx30	50-04-0125	184448		PhxSio		Rxxxx53	57-1-4362	3.6 kOhm	1%		
Dxxxx31	50-04-0124	184448		PhxSio		Rxxxx54	57-1-4362	3.6 kOhm	1%		
Dxxxx32	50-04-0125	184448		PhxSio		Rxxxx55	57-1-4362	3.6 kOhm	1%		
Dxxxx33	50-04-0124	184448		PhxSio		Rxxxx56	57-1-4362	3.6 kOhm	1%		
Dxxxx34	50-04-0125	184448		PhxSio		Rxxxx57	57-1-4362	3.6 kOhm	1%		
Dxxxx35	50-04-0124	184448		PhxSio		Rxxxx58	57-1-4362	3.6 kOhm	1%		
Dxxxx36	50-04-0125	184448		PhxSio		Rxxxx59	57-1-4362	3.6 kOhm	1%		
Dxxxx37	50-04-0124	184448		PhxSio		Rxxxx60	57-1-4362	3.6 kOhm	1%		
Dxxxx38	50-04-0125	184448		PhxSio		Rxxxx61	57-1-4362	3.6 kOhm	1%		
Dxxxx39	50-04-0124	184448		PhxSio		Rxxxx62	57-1-4362	3.6 kOhm	1%		
Dxxxx40	50-04-0125	184448		PhxSio		Rxxxx63	57-1-4362	3.6 kOhm	1%		
Dxxxx41	50-04-0124	184448		PhxSio		Rxxxx64	57-1-4362	3.6 kOhm	1%		
Dxxxx42	50-04-0125	184448		PhxSio		Rxxxx65	57-1-4362	3.6 kOhm	1%		
Dxxxx43	50-04-0124	184448		PhxSio		Rxxxx66	57-1-4362	3.6 kOhm	1%		
Dxxxx44	50-04-0125	184448		PhxSio		Rxxxx67	57-1-4362	3.6 kOhm	1%		
Dxxxx45	50-04-0124	184448		PhxSio		Rxxxx68	57-1-4362	3.6 kOhm	1%		
Dxxxx46	50-04-0125	184448		PhxSio		Rxxxx69	57-1-4362	3.6 kOhm	1%		
Dxxxx47	50-04-0124	184448		PhxSio		Rxxxx70	57-1-4362	3.6 kOhm	1%		
Dxxxx48	50-04-0125	184448		PhxSio		Rxxxx71	57-1-4362	3.6 kOhm	1%		
Dxxxx49	50-04-0124	184448		PhxSio		Rxxxx72	57-1-4362	3.6 kOhm	1%		
Dxxxx50	50-04-0125	184448		PhxSio		Rxxxx73	57-1-4362	3.6 kOhm	1%		
Dxxxx51	50-04-0124	184448		PhxSio		Rxxxx74	57-1-4362	3.6 kOhm	1%		
Dxxxx52	50-04-0125	184448		PhxSio		Rxxxx75	57-1-4362	3.6 kOhm	1%		
Dxxxx53	50-04-0124	184448		PhxSio		Rxxxx76	57-1-4362	3.6 kOhm	1%		
Dxxxx54	50-04-0125	184448		PhxSio		Rxxxx77	57-1-4362	3.6 kOhm	1%		
Dxxxx55	50-04-0124	184448		PhxSio		Rxxxx78	57-1-4362	3.6 kOhm	1%		
Dxxxx56	50-04-0125	184448		PhxSio		Rxxxx79	57-1-4362	3.6 kOhm	1%		
Dxxxx57	50-04-0124	184448		PhxSio		Rxxxx80	57-1-4362	3.6 kOhm	1%		
Dxxxx58	50-04-0125	184448		PhxSio		Rxxxx81	57-1-4362	3.6 kOhm	1%		
Dxxxx59	50-04-0124	184448		PhxSio		Rxxxx82	57-1-4362	3.6 kOhm	1%		
Dxxxx60	50-04-0125	184448		PhxSio		Rxxxx83	57-1-4362	3.6 kOhm	1%		
Dxxxx61	50-04-0124	184448		PhxSio		Rxxxx84	57-1-4362	3.6 kOhm	1%		
Dxxxx62	50-04-0125	184448		PhxSio		Rxxxx85	57-1-4362	3.6 kOhm	1%		
Dxxxx63	50-04-0124	184448		PhxSio		Rxxxx86	57-1-4362	3.6 kOhm	1%		
Dxxxx64	50-04-0125	184448		PhxSio		Rxxxx87	57-1-4362	3.6 kOhm	1%		
Dxxxx65	50-04-0124	184448		PhxSio		Rxxxx88	57-1-4362	3.6 kOhm	1%		
Dxxxx66	50-04-0125	184448		PhxSio		Rxxxx89	57-1-4362	3.6 kOhm	1%		
Dxxxx67	50-04-0124	184448		PhxSio		Rxxxx90	57-1-4362	3.6 kOhm	1%		
Dxxxx68	50-04-0125	184448		PhxSio		Rxxxx91	57-1-4362	3.6 kOhm	1%		
Dxxxx69	50-04-0124	184448		PhxSio		Rxxxx92	57-1-4362	3.6 kOhm	1%		
Dxxxx70	50-04-0125	184448		PhxSio		Rxxxx93	57-1-4362	3.6 kOhm	1%		
Dxxxx71	50-04-0124	184448		PhxSio		Rxxxx94	57-1-4362	3.6 kOhm	1%		
Dxxxx72	50-04-0125	184448		PhxSio		Rxxxx95	57-1-4362	3.6 kOhm	1%		
Dxxxx73	50-04-0124	184448		PhxSio		Rxxxx96	57-1-4362	3.6 kOhm	1%		
Dxxxx74	50-04-0125	184448		PhxSio		Rxxxx97	57-1-4362	3.6 kOhm	1%		
Dxxxx75	50-04-0124	184448		PhxSio		Rxxxx98	57-1-4362	3.6 kOhm	1%		
Dxxxx76	50-04-0125	184448		PhxSio		Rxxxx99	57-1-4362	3.6 kOhm	1%		
Dxxxx77	50-04-0124	184448		PhxSio		Rxxxx100	57-1-4362	3.6 kOhm	1%		
Dxxxx78	50-04-0125	184448		PhxSio		Rxxxx101	57-1-4362	3.6 kOhm	1%		
Dxxxx79	50-04-0124	184448		PhxSio		Rxxxx102	57-1-4362	3.6 kOhm	1%		
Dxxxx80	50-04-0125	184448		PhxSio		Rxxxx103	57-1-4362	3.6 kOhm	1%		
Dxxxx81	50-04-0124	184448		PhxSio		Rxxxx104	57-1-4362	3.6 kOhm	1%		
Dxxxx82	50-04-0125	184448		PhxSio		Rxxxx105	57-1-4362	3.6 kOhm	1%		
Dxxxx83	50-04-0124	184448		PhxSio		Rxxxx106	57-1-4362	3.6 kOhm	1%		
Dxxxx84	50-04-0125	184448		PhxSio		Rxxxx107	57-1-4362	3.6 kOhm	1%		
Dxxxx85	50-04-0124	184448		PhxSio		Rxxxx108	57-1-4362	3.6 kOhm	1%		
Dxxxx86	50-04-0125	184448		PhxSio		Rxxxx109	57-1-4362	3.6 kOhm	1%		
Dxxxx87	50-04-0124	184448		PhxSio		Rxxxx110	57-1-4362	3.6 kOhm	1%		
Dxxxx88	50-04-0125	184448		PhxSio		Rxxxx111	57-1-4362	3.6 kOhm	1%		
Dxxxx89	50-04-0124	184448		PhxSio		Rxxxx112	57-1-4362	3.6 kOhm	1%		
Dxxxx90	50-04-0125	184448		PhxSio		Rxxxx113	57-1-4362	3.6 kOhm	1%		
Dxxxx91	50-04-0124	184448		PhxSio		Rxxxx114	57-1-4362	3.6 kOhm	1%		
Dxxxx92	50-04-0125	184448		PhxSio		Rxxxx115	57-1-4362	3.6 kOhm	1%		
Dxxxx93	50-04-0124	184448		PhxSio		Rxxxx116	57-1-4362	3.6 kOhm	1%		
Dxxxx94	50-04-0125	184448		PhxSio		Rxxxx117	57-1-4362	3.6 kOhm	1%		
Dxxxx95	50-04-0124	184448		PhxSio		Rxxxx118	57-1-4362	3.6 kOhm	1%		
Dxxxx96	50-04-0125	184448		PhxSio		Rxxxx119	57-1-4362	3.6 kOhm	1%		
Dxxxx97	50-04-0124	184448		PhxSio		Rxxxx120	57-1-4362	3.6 kOhm	1%		
Dxxxx98	50-04-0125	184448		PhxSio		Rxxxx121	57-1-4362	3.6 kOhm	1%		
Dxxxx99	50-04-0124	184448		PhxSio		Rxxxx122	57-1-4362	3.6 kOhm	1%		
Dxxxx100	50-04-0125	184448		PhxSio		Rxxxx123	57-1-4362	3.6 kOhm	1%		
Dxxxx101	50-04-0124	184448		PhxSio		Rxxxx124	57-1-4362	3.6 kOhm	1%		
Dxxxx102	50-04-0125	184448		PhxSio		Rxxxx125	57-1-4362	3.6 kOhm	1%		
Dxxxx103	50-04-0124	184448		PhxSio		Rxxxx126	57-1-4362	3.6 kOhm	1%		
Dxxxx104	50-04-0125	184448		PhxSio		Rxxxx127	57-1-4362	3.6 kOhm	1%		
Dxxxx105	50-04-0124	184448		PhxSio		Rxxxx128	57-1-4362	3.6 kOhm	1%		
Dxxxx106	50-04-0125	184448		PhxSio		Rxxxx129	57-1-4362	3.6 kOhm	1%		
Dxxxx107	50-04-0124	184448		PhxSio		Rxxxx130	57-1-4362	3.6 kOhm	1%		
Dxxxx108	50-04-0125	184448		PhxSio		Rxxxx131	57-1-4362	3.6 kOhm	1%		
Dxxxx109	50-04-0124	184448		PhxSio		Rxxxx132	57-1-4362	3.6 kOhm	1%		
Dxxxx110	50-04-0125	184448		PhxSio		Rxxxx133	57-1-4362	3.6 kOhm	1%		
Dxxxx111	50-04-0124	184448		PhxSio		Rxxxx134	57-1-4362	3.6 kOhm	1%		
Dxxxx112	50-04-0125	184448		PhxSio		Rxxxx135	57-1-4362	3.6 kOhm	1%		
Dxxxx113	50-04-0124	184448		PhxSio		Rxxxx136	57-1-4362	3.6 kOhm	1%		
Dxxxx114	50-04-0125	184448		PhxSio		Rxxxx137	57-1-4362	3.6 kOhm	1%		
Dxxxx115	50-04-0124	184448		PhxSio		Rxxxx138	57-1-4362	3.6 kOhm	1%		
Dxxxx116	50-04-0125	184448		PhxSio		Rxxxx139	57-1-4362	3.6 kOhm	1%		
Dxxxx117	50-04-0124	184448		PhxSio		Rxxxx140	57-1-4362	3.6 kOhm	1%		
Dxxxx118	50-04-0125	184448		PhxSio		Rxxxx141	57-1-4362	3.6 kOhm	1%		
Dxxxx119	50-04-0124	184448		PhxSio		Rxxxx142	57-1-4362	3.6 kOhm	1%		
Dxxxx120	50-04-0125	184448		PhxSio		Rxxxx143	57-1-4362	3.6 kOhm	1%		
Dxxxx121	50-04-0124	184448		PhxSio		Rxxxx144	57-1-4362	3.6 kOhm	1%		
Dxxxx122	50-04-0125	184448		PhxSio		Rxxxx145	57-1-4362	3.6 kOhm	1%		
Dxxxx123	50-04-0124	184448		PhxSio		Rxxxx146	57-1-4362	3.6 kOhm	1%		
Dxxxx124	50-04-0125	184448		PhxSio		Rxxxx147	57-1-4362	3.6 kOhm	1%		
Dxxxx125	50-04-0124	184448		PhxSio		Rxxxx148	57-1-4362	3.6 kOhm	1%		
Dxxxx126	50-04-0125	184448		PhxSio		Rxxxx149	57-1-4362	3.6 kOhm	1%		
Dxxxx127	50-04-0124	184448		PhxSio		Rxxxx150	57-1-4362	3.6 kOhm	1%		
Dxxxx128	50-04-0125	184448		PhxSio		Rxxxx151	57-1-4362	3.6 kOhm	1%		
Dxxxx129	50-04-0124	184448		PhxSio		Rxxxx152	57-1-4362	3.6 kOhm	1%		
Dxxxx130	50-04-0125	184448		PhxSio		Rxxxx153	57-1-4362	3.6 kOhm	1%		
Dxxxx131	50-04-0124	184448		PhxSio		Rxxxx154	57-1-4362	3.6 kOhm	1%		
Dxxxx132	50-04-0125	184448		PhxSio		Rxxxx155	57-1-4362	3.6 kOhm	1%		
Dxxxx133	50-04-0124	184448		PhxSio		Rxxxx156	57-1-4362	3.6 kOhm	1%		
Dxxxx134	50-04-0125	184448		PhxSio		Rxxxx157	57-1-4362	3.6 kOhm	1%		
Dxxxx135	50-04-0124	184448		PhxSio		Rxxxx158	57-1-4362	3.6 kOhm	1%		
Dxxxx136	50-04-0125	184448		PhxSio		Rxxxx159	57-1-4362	3.6 kOhm	1%		
Dxxxx137	50-04-0124	184448		PhxSio		Rxxxx160	57-1-4362	3.6 kOhm	1%		
Dxxxx138	50-04-0125	184448		PhxSio		Rxxxx161	57-1-4362	3.6 kOhm	1%		
Dxxxx139	50-04-0124	184448		PhxSio		Rxxxx162	57-1-4362	3.6 kOhm	1%		
Dxxxx140	50-04-0125	184448		PhxSio		Rxxxx163	57-1-4362	3.6 kOhm	1%		
Dxxxx141	50-04-0124	184448		PhxSio		Rxxxx164	57-1-4362	3.6 kOhm	1%		
Dxxxx142	50-04-0125	184448		PhxSio		Rxxxx165	57-1-4362	3.6 kOhm	1%		
Dxxxx143	50-04-0124	184448		PhxSio		Rxxxx166	57-1-4362	3.6 kOhm	1%		
Dxxxx144	50-04-0125	184448		PhxSio		Rxxxx167	57-1-4362	3.6 kOhm	1%		
Dxxxx145	50-04-0124	184448		PhxSio		Rxxxx168	57-1-4362	3.6 kOhm	1%		
Dxxxx146	50-04-0125	184448		PhxSio		Rxxxx169	57-1-4362	3.6 kOhm	1%		
Dxxxx147	50-04-0124	184448		PhxSio		Rxxxx170	57-1-4362	3.6 kOhm	1%		
Dxxxx148	50-04-0125	184									

1.180.710-82/81

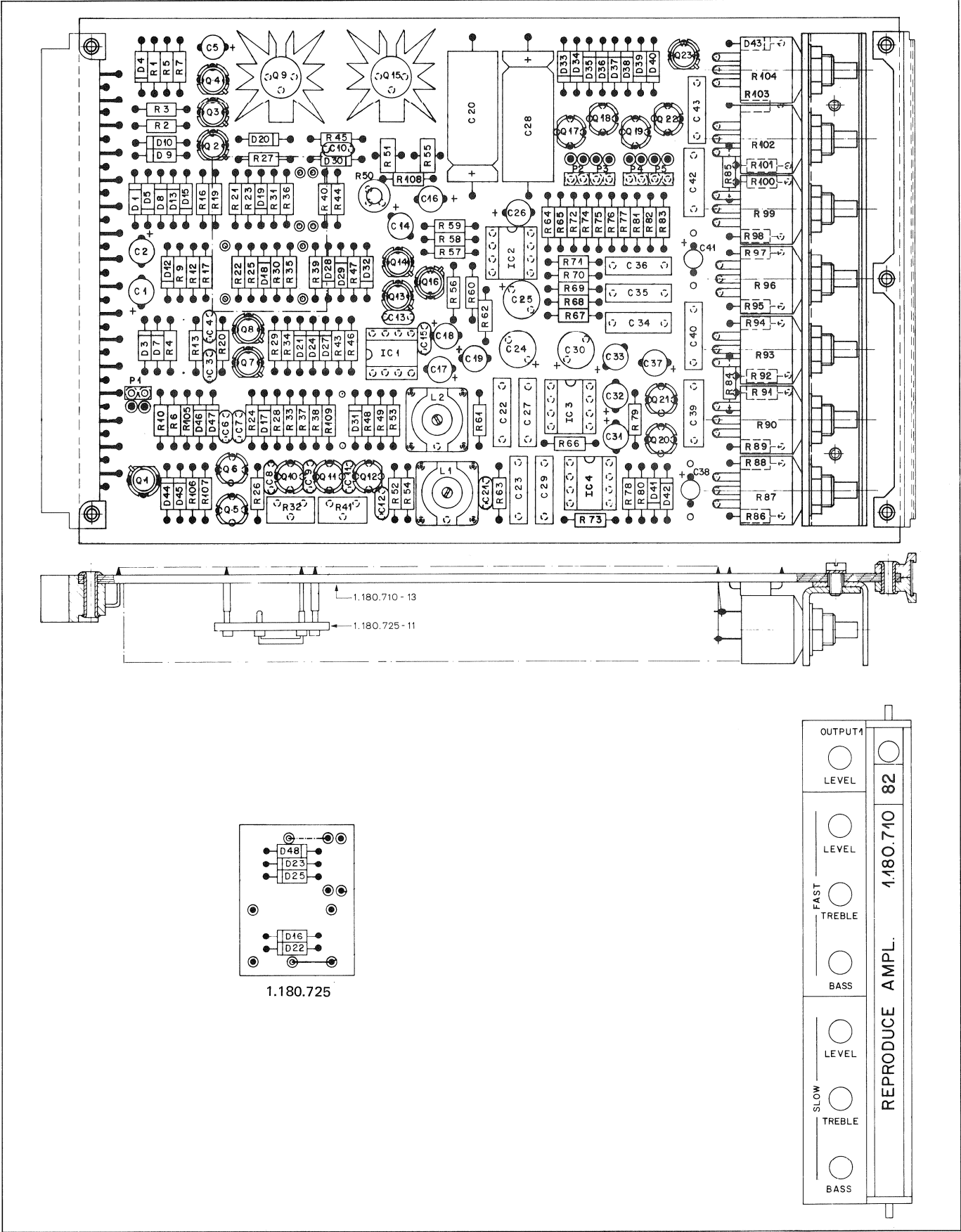
GR90

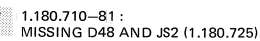
REPRODUCE AMPLIFIER PCB 1.180.710-82/81 GR90



REPRODUCE AMPLIFIER PCB 1.180.710-82/81 GR90

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GR90



1.180.710-82/81
GR90

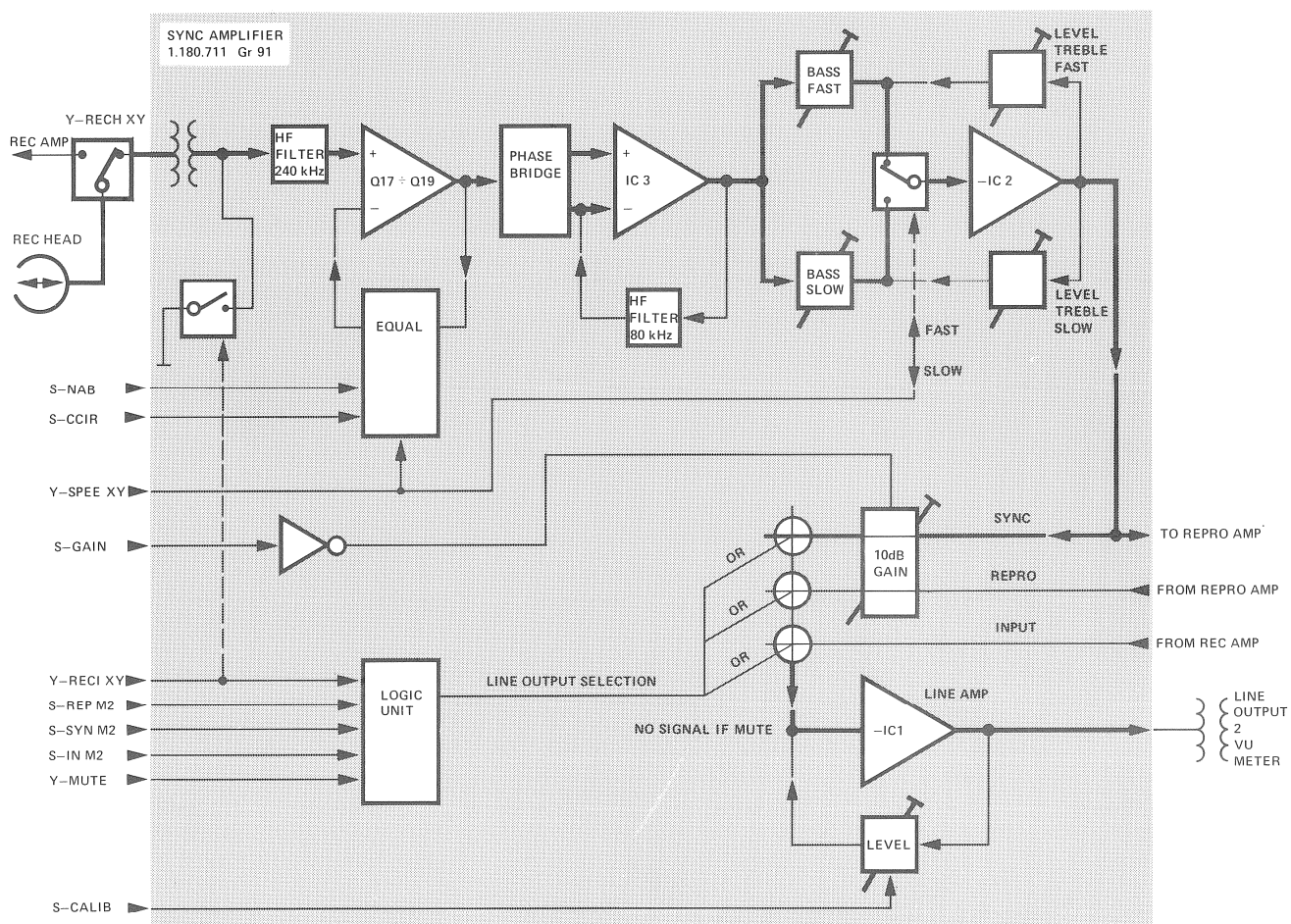
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09.12.82

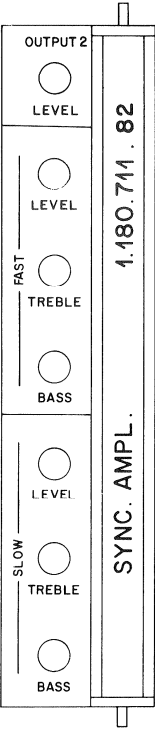
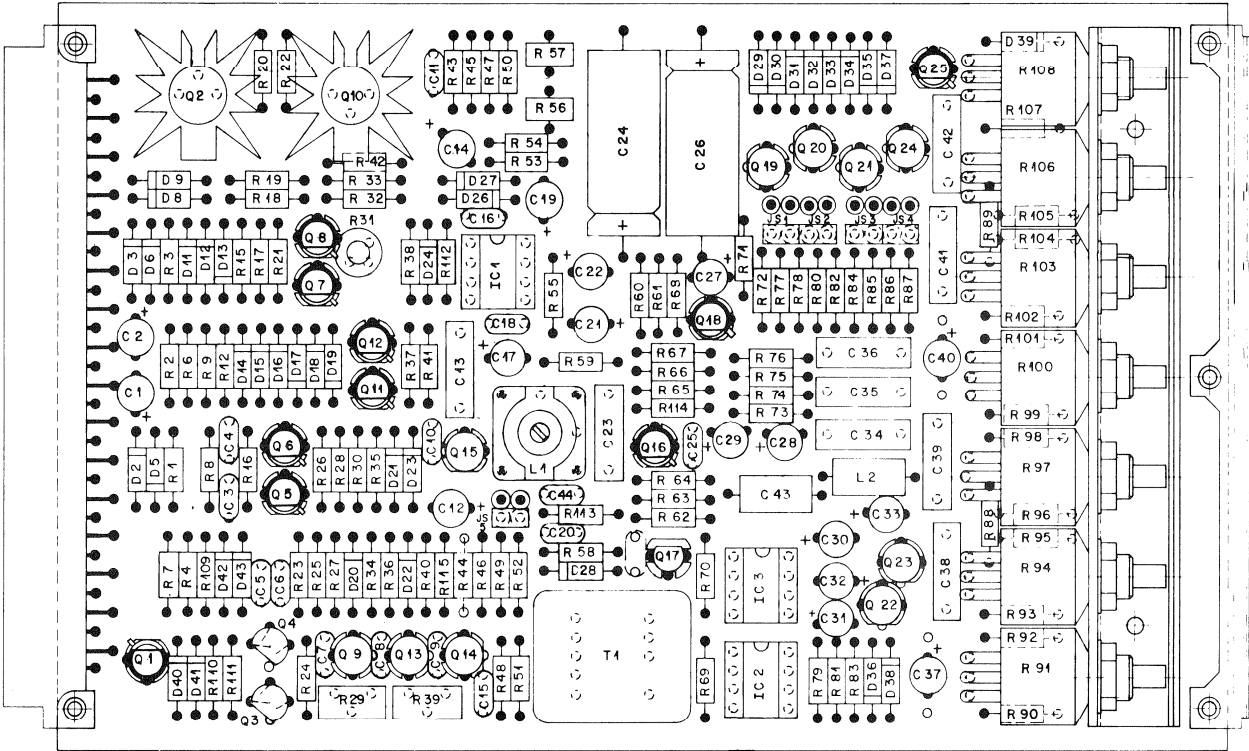
1.180.711-82

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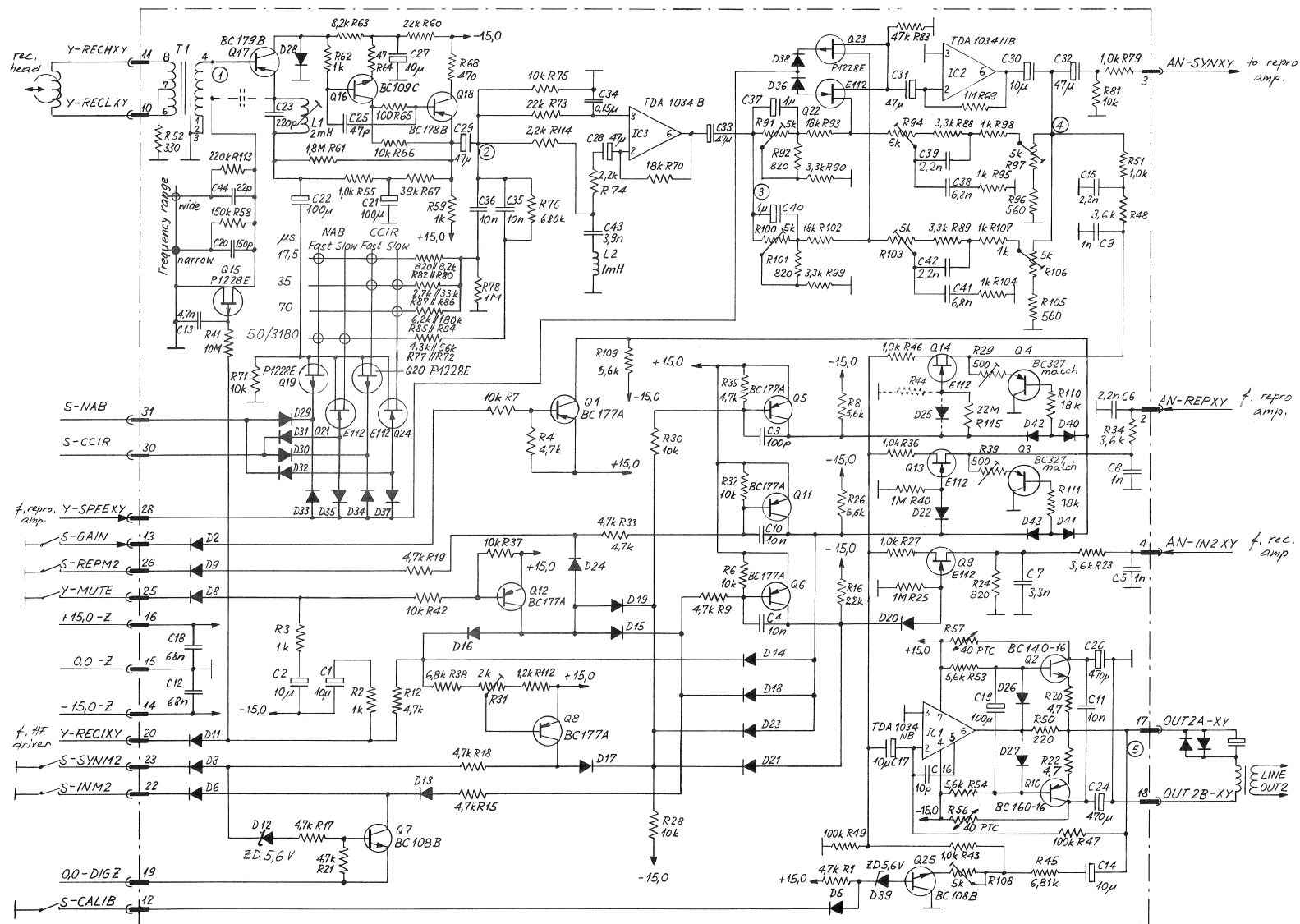
GR91



SYNC AMPLIFIER PCB 1.180.711-82 GR91



SYNC AMPLIFIER PCB 1.180.711-82 GR91

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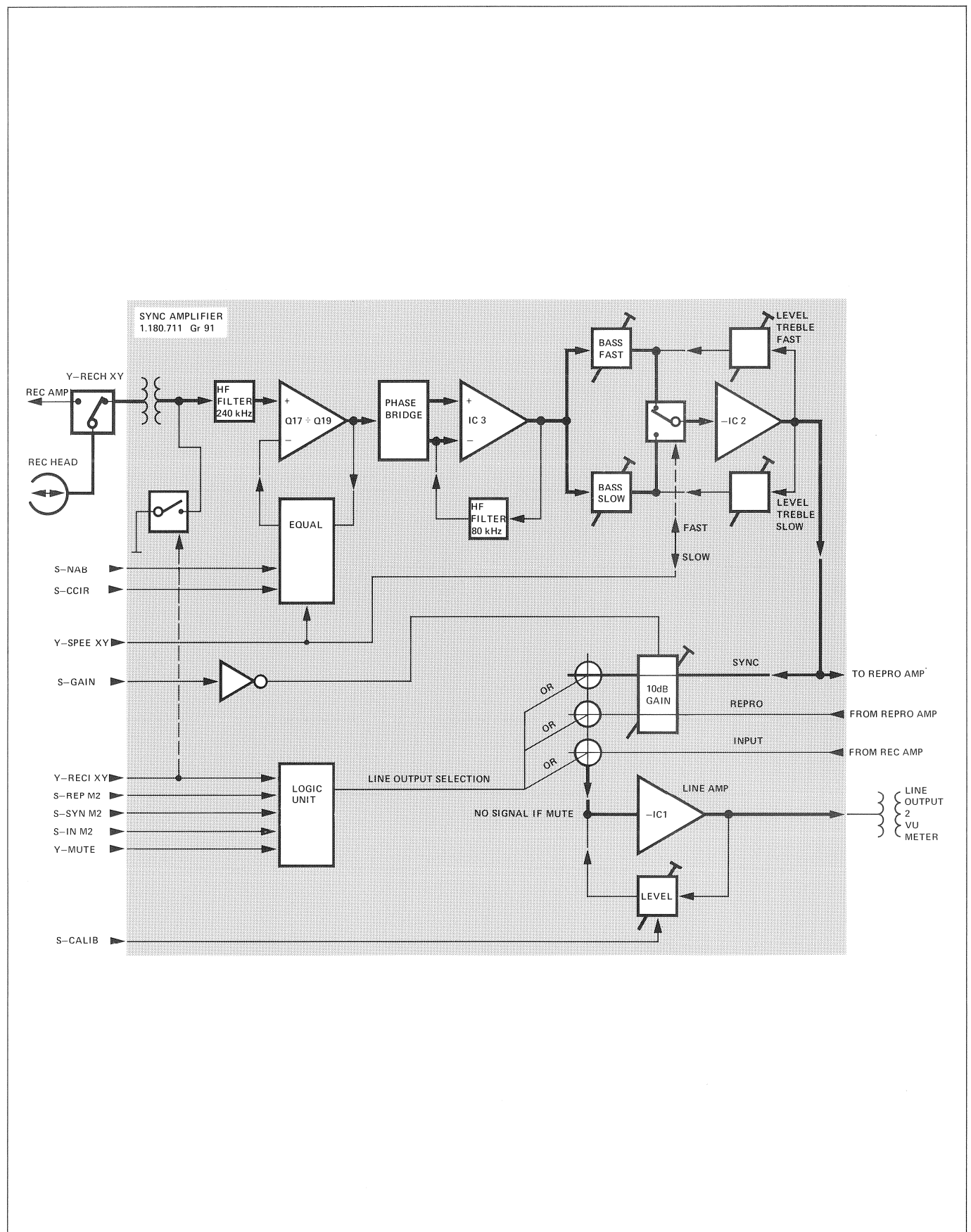
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14,03,83

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SYNC AMPLIFIER PCB 1.180.711-81 GR91

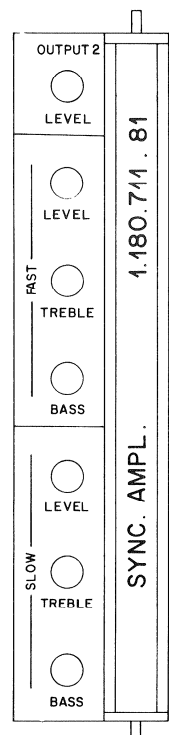
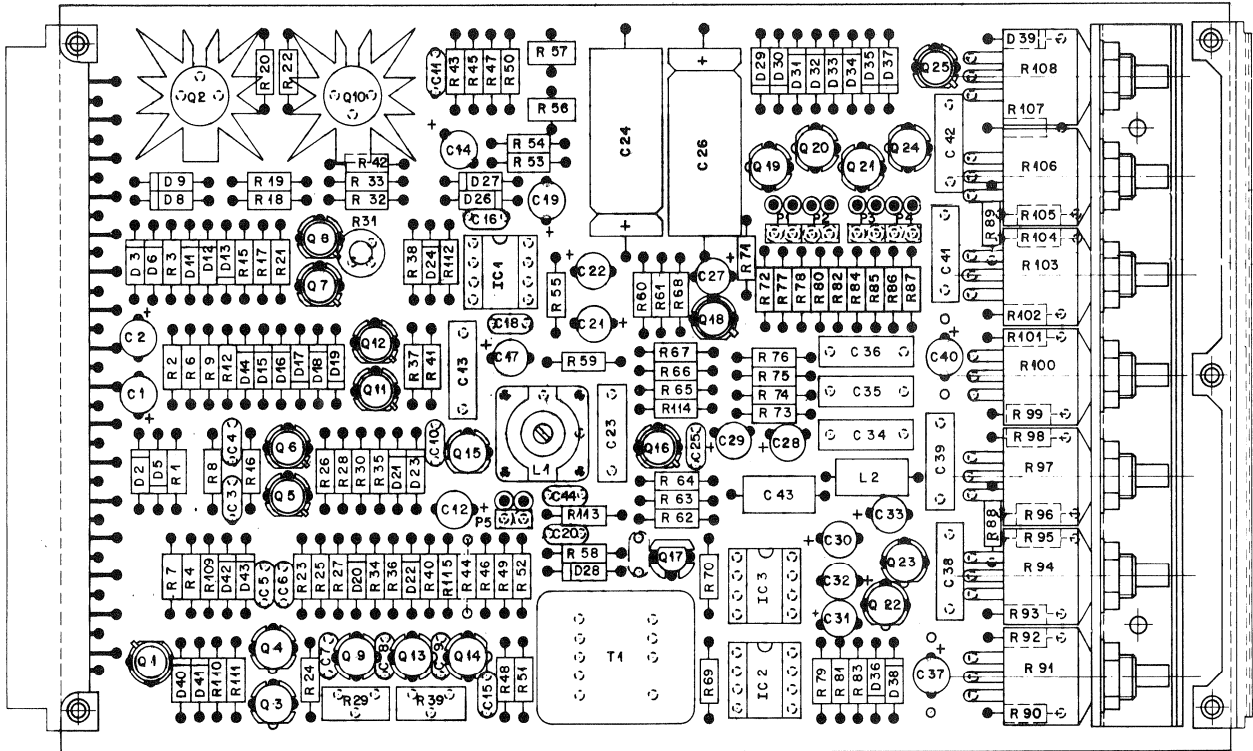
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SYNC AMPLIFIER PCB 1.180.711-81 GR91

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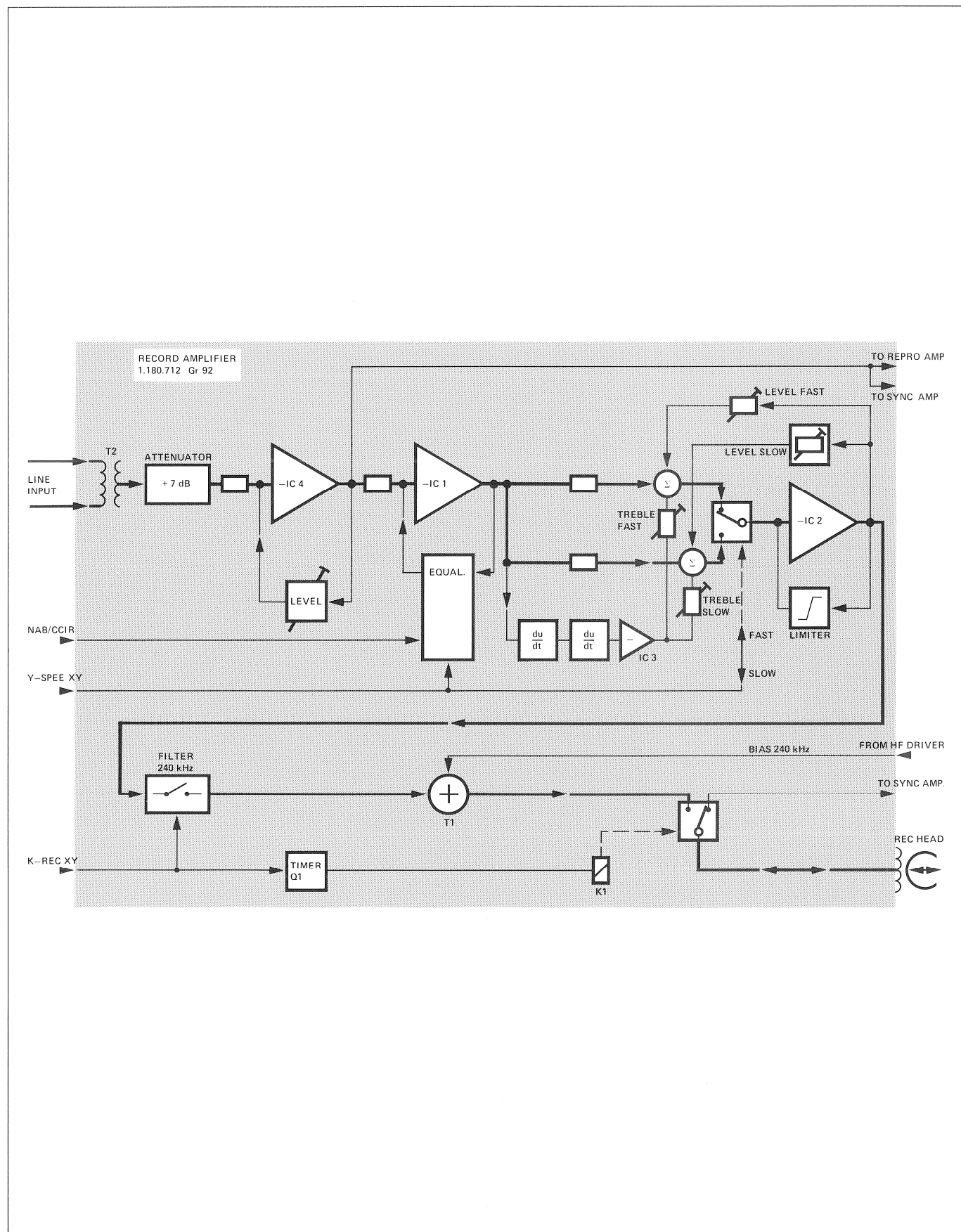
POS NO	PART NO	VALUE	SPECIFICATIONS	EQUIVALENT MFR
R 42	17. 11. 4722	1.24 1/2	C's	0.25W
R 44	17. 11. 4770	4722		
R 45	17. 11. 4722	4722		
R 44	17. 11. 4702	104 0		
R 47	17. 11. 4702	219 2		
R 48	17. 11. 4471	470 1/2		
R 61	17. 11. 4702	199 0		
R 62	17. 11. 4702	404 1/2		
R 70	17. 11. 4702	404 1/2		
R 70	17. 11. 4722	224 1/2		
R 72	17. 11. 4722	224 1/2		
R 74	17. 11. 4722	224 1/2		
R 75	17. 11. 4702	404 1/2		
R 75	17. 11. 4702	149 1/2		
R 77	17. 11. 4721	470 1/2	4%	
R 78	17. 11. 4702	404 1/2		
R 79	17. 11. 4702	404 0	1%	
R 80	17. 11. 4722	474 1/2		
R 81	17. 11. 4702	404 1/2		
R 82	17. 11. 4722	229 1/2		
R 83	17. 11. 4721	474 1/2	2%	
R 84	17. 11. 4722	224 1/2		
R 85	17. 11. 4722	224 1/2		
R 86	17. 11. 4722	224 1/2		
R 87	17. 11. 4722	224 1/2		
R 88	17. 11. 4722	224 1/2		
R 89	17. 11. 4722	224 1/2		
R 90	17. 11. 4722	224 1/2		
R 91	17. 11. 4722	224 1/2		
R 92	17. 11. 4722	224 1/2		
R 93	17. 11. 4722	224 1/2		
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R 309	17. 11. 4722	224 1/2		
R 310	17. 11. 4722</			

POS NO	PART NO	VALUE	SPECIFICATIONS	EQUIVALENT	MFR
R 100	17, 11, 4222	22 A 3	1%	0.25W	
R 110	17, 02, 5104	50 M 3	40%		
R 111	17, 02, 5104	50 M 3	40%		
R 112	17, 01, 4122	4.2 A 3	1%		
R 113	17, 01, 4122	22 A 3	1%		
R 114	17, 11, 4222	22 A 3	1%		
R 115	17, 11, 4222	22 M 3	40%		
IC 01	10, 01, 0 244	73 A 4024 48			241
IC 02	10, 01, 0 244	73A 4024 48			241
IC 03	10, 01, 0 244	10A 4024 48			241
<u>PCB Materials</u>					
② 22. 22 <u>impregnated cardstock 1024</u>					
<u>impregnated</u>					
VAL = 745256C					
			32. 5. 88	Endorse	
			20. 9. 82	Endorse	
			10. 10. 81	Endorse	
			11. 02. 79	Endorse	
			11. 8. 78	Endorse	
			IND DATE	NAME	
STUDER			1. 180. 7. 81 - 81	PAGE	
Spec. Amplifier				6 of 6	

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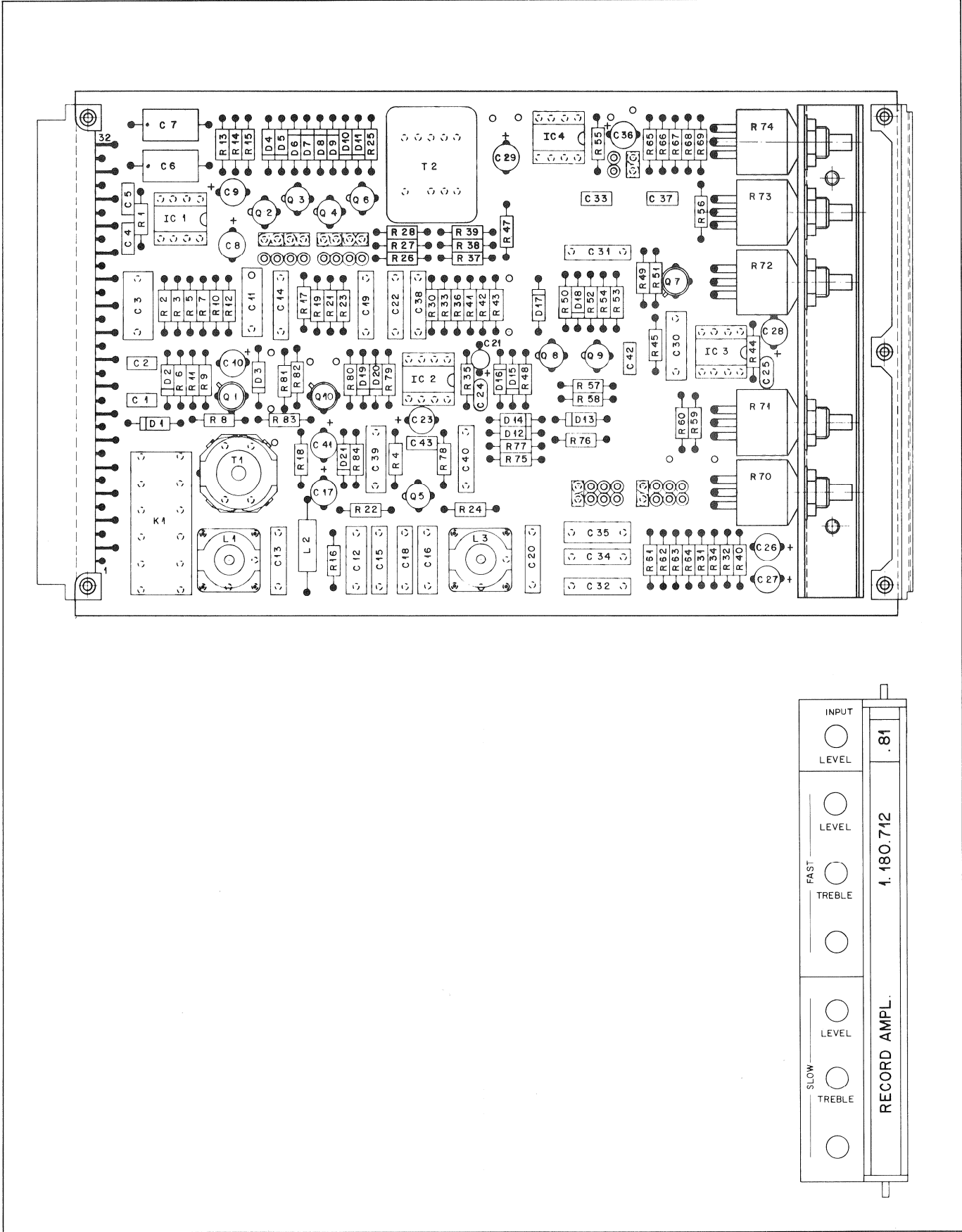
RECORD AMPLIFIER PCB 1.180.712-81 GR92

GR92

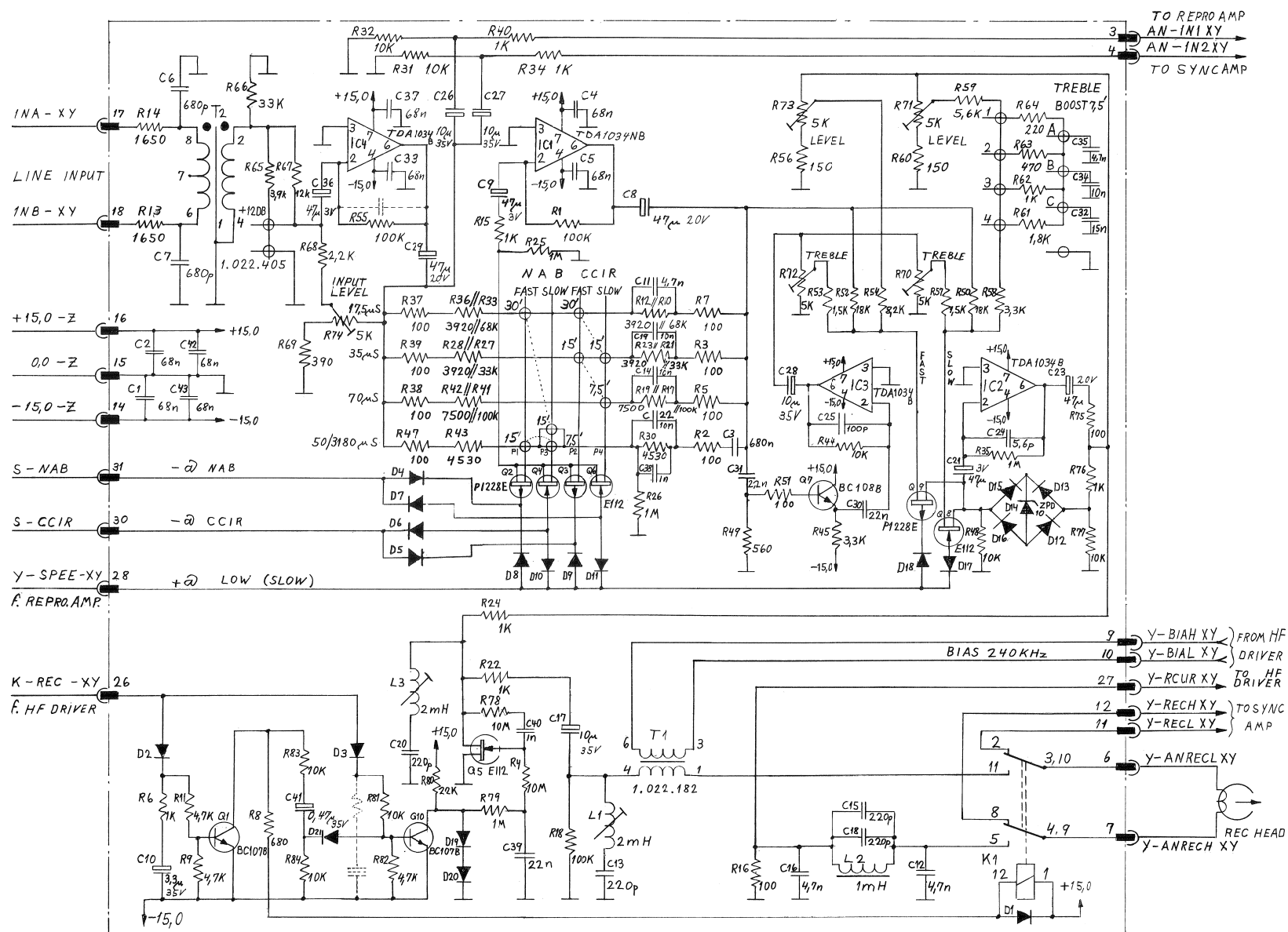


RECORD AMPLIFIER PCB 1.180.712-81 GR92

1.180.712-81
GR92



1.180.712-81
GR92



1.180.712-81 GR92

RECORD AMPLIFIER PCB 1.180.712-81 GR92

INDX POS NO	PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MFR
C 01	59.99.0205	68 nF	20% 63V CER	
C 02	59.99.0205	68 nF	20% 63V CER	
C 03	59.02.0684	0,68 µF	5% 63V MPC	
C 04	59.99.0205	68 nF	20% 63V CER	
C 05	59.99.0205	68 nF	20% 63V CER	
C 06	59.12.9681	680 pF	1% 500V PS	
C 07	59.12.9681	680 pF	1% 500V PS	
C 08	59.30.5470	47 µF	20% 20V TA	
C 09	59.30.1470	47 µF	20% 3V TA	
C 10	59.36.5339	3,3 µF	20% 35V TA	
C 11	59.11.4472	4,7 nF	5% 160V PC	
C 12	59.11.4472	4,7 nF	5% 160V PC	
C 13	59.11.6221	220 pF	5% 400V	
C 14	59.11.4103	10 nF	2,5% 160V	
C 15	59.11.6221	220 pF	5% 400V	
C 16	59.11.4472	4,7 nF	5% 160V	
C 17	59.30.6100	10 µF	20% 35V TA	
C 18	59.11.6221	220 pF	5% 160V PC	
C 19	59.11.4103	10 nF	2,5% 160V	
C 20	59.11.6221	220 pF	5% 160V	
C 21	59.30.1470	47 µF	20% 3V TA	
C 22	59.11.4103	10 nF	2,5% 160V PC	
C 23	59.30.5470	47 µF	20% 20V TA	
C 24	59.34.0569	5,6 pF	10% F100 CER	
C 25	59.34.4101	100 pF	5% N750 CER	
C 26	59.30.6100	10 µF	20% 35V TA	
C 27	59.30.6100	10 µF	20% 35V TA	
C 28	59.30.6100	10 µF	20% 35V TA	
C 29	59.30.5470	47 µF	20% 20V TA	
C 30	59.02.5223	22 nF	5% 250V MPC	

INDX	DATE	NAME
④		
③		
②		
①		
①	17.7.79	R.G./gv
STUDER Record Amplifier PL 1.180.712-81 PAGE 1 OF 7		

INDX POS NO	PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MFR
C 31	59.11.6222	2,2 nF	5% 160V PC	
C 32	59.11.3153	15 nF	5% 160V PC	
C 33	59.99.0205	68 nF	20% 63V CER	
C 34	59.11.4103	10 nF	5% 160V PC	
C 35	59.11.4472	4,7 nF	5% 160V PC	
C 36	59.30.1470	47 µF	20% 3V TA	
C 37	59.99.0205	68 nF	20% 63V CER	
C 38	59.11.6102	1 nF	5% 160V PC	
C 39	59.02.5223	22 nF	5% 250V MPC	
C 40	59.11.6102	1 nF	5% 160V PC	
C 41	59.36.5478	0,47 µF	20% 35V TA	
C 42	59.99.0205	68 nF	20% 63V CER	
C 43	59.99.0205	68 nF	20% 63V CER	
D 01	50.04.0125	184448		
D 02	50.04.0125	184448		
D 03	50.04.0125	184448		
D 04	50.04.0125	184448		
D 05	50.04.0125	184448		
D 06	50.04.0125	184448		
D 07	50.04.0125	184448		

INDX	DATE	NAME
④		
③		
②		
①		
①	17.7.79	R.G./gv
STUDER Record Amplifier PL 1.180.712-81 PAGE 2 OF 7		

INDX POS NO	PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MFR
D 08	50.04.0125	184448		
D 09	50.04.0125	184448		
D 10	50.04.0125	184448		
D 11	50.04.0125	184448		
D 12	50.04.0125	184448	4 ns	
D 13	50.04.0125	184448	4 ns	
D 14	50.04.0114	800 10		
D 15	50.04.0125	184448	4 ns	
D 16	50.04.0125	184448	4 ns	
D 17	50.04.0125	184448		
D 18	50.04.0125	184448		
D 19	50.04.0125	184448		
D 20	50.04.0125	184448		
D 21	50.04.0125	184448		
IC 1	50.05.0244	TDA1034NN	low noise NE 5534A	P,Sig
IC 2	50.05.0244	TDA1034NN	NE 5534A	
IC 3	50.05.0244	TDA1034NN	NE 5534A	
IC 4	50.05.0243	TDA1034B	NE 5534	
K 01	56.04.0130	24 V	{K form A cont. (make) } s2 24V NS,DS	
L 01	1.022.177.00	2 mH		St.

INDX	DATE	NAME
④		
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①	17.7.79	R.G./gv
STUDER Record Amplifier PL 1.180.712-81 PAGE 3 OF 7		

INDX POS NO	PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MFR
L 02	62.01.0128	1 mH	10% 2307 105/ 16 104	D/G
L 03	1.022.177.00	2 mH		St
Q 01	50.03.0408	BC 107 B	NPN	M,P,S
Q 02	50.03.0329	P 1228 E	FD-PET	SPF 316 TD,M
Q 03	50.03.0329	P 1228 E		
Q 04	50.03.0350	J 112FZ18	N-PET	MPF 4392 NS,M
Q 05	50.03.0350	J 112FZ18		
Q 06	50.03.0350	J 112FZ18		
Q 07	50.03.0409	BC 108 B	NPN	M,P,S
Q 08	50.03.0350	J 112FZ18	N-PET	MPF 4392 NS,M
Q 09	50.03.0329	P 1228 E	FD-PET	SPF 316 TD,M
Q 10	50.03.0408	BC 107 B	NPN	M,P,S
R 01	57.11.4104	100 k	5% .25W CF	
R 02	57.11.4101	100		
R 03	57.11.4101	100		
R 04	57.02.4106	10 M	5% .25W CC	
R 05	57.11.4101	100		
R 06	57.11.4102	1 k	CF	
R 07	57.11.4101	100		
R 08	57.11.4581	680		
R 09	57.11.4472	4,7 k		
R 10	57.11.4583	68 k		
R 11	57.11.4472	4,7 k		
R 12	57.39.3321	3,92 k	1% .25W MF	

INDX	DATE	NAME
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①		
①	17.7.79	R.G./gv
STUDER Record Amplifier PL 1.180.712-81 PAGE 4 OF 7		

INDX POS NO	PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MFR
R 13	57.39.1651	1,65 k	1% .25W MF	
R 14	57.39.1651	1,65 k		
R 15	57.11.4102	1 k	5% .25W CF	
R 16	57.11.4101	100		
R 17	57.11.4104	100 k		
R 18	57.11.4104	100 k		
R 19	57.39.7501	7,5 k	1% .25W MF	
R 20	not used			
R 21	57.11.4333	33 k	5% .25W CF	
R 22	57.11.4302	1 k		
R 23	57.39.3921	3,92 k	1% .25W MF	
R 24	57.11.4102	1 k	5% .25W CF	
R 25	57.11.4105	1 M		
R 26	57.11.4105	1 M		
R 27	57.11.4333	33 k		
R 28	57.39.3921	3,92 k	1% .25W MF	
R 29	not used			
R 30	57.39.4531	4,53 k	1% .25W MF	
R 31	57.11.4103	10 k	5% .25W CF	
R 32	57.11.4103	10 k		
R 33	57.11.4683	68 k		
R 34	57.39.1001	1 k	1% .25W MF	
R 35	57.11.4105	1 M	5% .25W CF	
R 36	57.39.3921	3,92 k	1% .25W MF	
R 37	57.11.4101	100	5% .25W CF	
R 38	57.11.4101	100		
R 39	57.11.4101	100		
R 40	57.39.1001	1 k	1% .25W MF	
R 41	57.11.4104	100 k	5% .25W CF	
R 42	57.39.7501	7,5 k	1% .25W MF	

INDX	DATE	NAME
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①	17.7.79	R.G./gv
STUDER Record Amplifier PL 1.180.712-81 PAGE 5 OF 7		

INDX POS NO	PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MFR
R 43	57.39.4531	4,53 k	1% .25W MF	
R 44	57.11.4103	10 k	5% .25W CF	
R 45	57.11.4332	3,3 k	5% .25W CF	
R 46	not used			
R 47	57.11.4101	100	5% .25W CF	
R 48	57.11.4103	10 k		
R 49	57.11.4561	560		
R 50	57.11.4183	18 k		
R 51	57.11.4101	100		
R 52	57.11.4183	18 k		
R 53	57.11.4152	1,5 k		
R 54	57.11.4822	8,2 k		
R 55	57.11.4104	100 k		
R 56	57.11.4151	150		
R 57	57.11.4152	1,5 k		
R 58	57.11.4332	3,3 k		
R 59	57.11.4562	5,6 k		
R 60	57.11.4151	150		
R 61	57.11.4182	1,8 k		
R 62	57.11.4102	1 k		
R 63	57.11.4471	470		
R 64	57.11.4221	220		
R 65	57.11.4382	3,9 k		
R 66	57.11.4333	33 k		
R 67	57.11.4123	12 k		
R 68	57.11.4222	2,2 k		
R 69	57.11.4391	390		
R 70	58.03.0502	5 k	10% 0,5W VAR lin.	AB
R 71	58.03.2502	5 k	neg.log.	
R 72	58.03.0502	5 k	lin.	

INDX	DATE	NAME
④		
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①	17.7.79	R.G./gv
STUDER Record Amplifier PL 1.180.712-81 PAGE 6 OF 7		

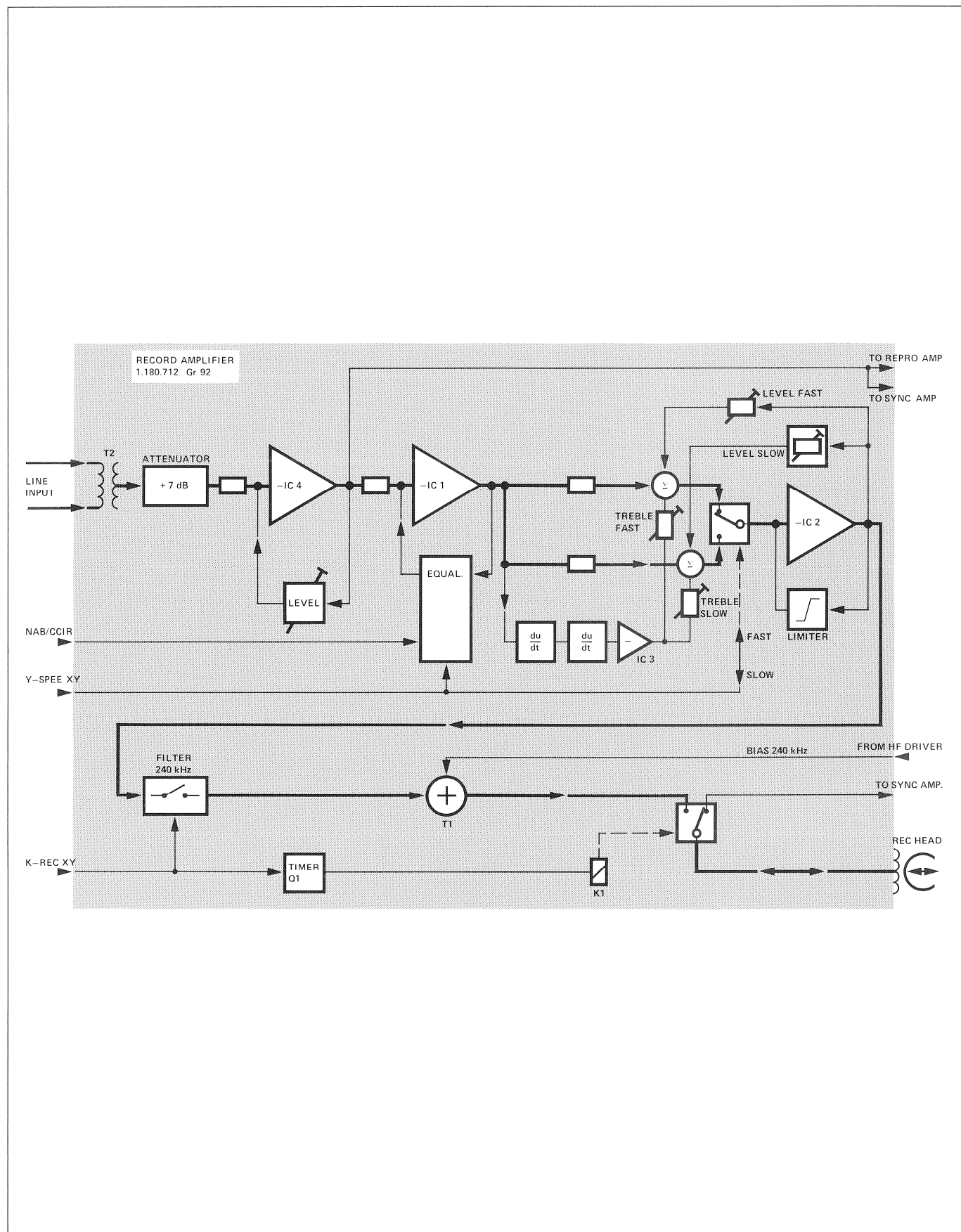
INDX POS NO	PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MFR
R 73	58.03.2502	5 k	10% 0,5W VAR neg.log.	AB
R 74	58.03.2502	5 k	10% 0,5W VAR neg.log.	AB
R 75	57.11.4101	100	5% .25W CF	
R 76	57.11.4102	1 k		
R 77	57.11.4103	10 k		
R 78	57.02.4106	10 M		
R 79	57.11.4105	1 M		
R 80	57.11.4223	22 k		
R 81	57.11.4103	10 k		
R 82	57.11.4473	4,7 k		
R 83	57.11.4103	10 k		
R 84	57.11.4103	10 k		
T 01	1.022.182.00			St
T 02	1.022.405.00			St

INDX	DATE	NAME
④		
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①		
①	17.7.79	R.G./gv
STUDER Record Amplifier PL 1.180.712-81 PAGE 7 OF 7		

1.180.712-00

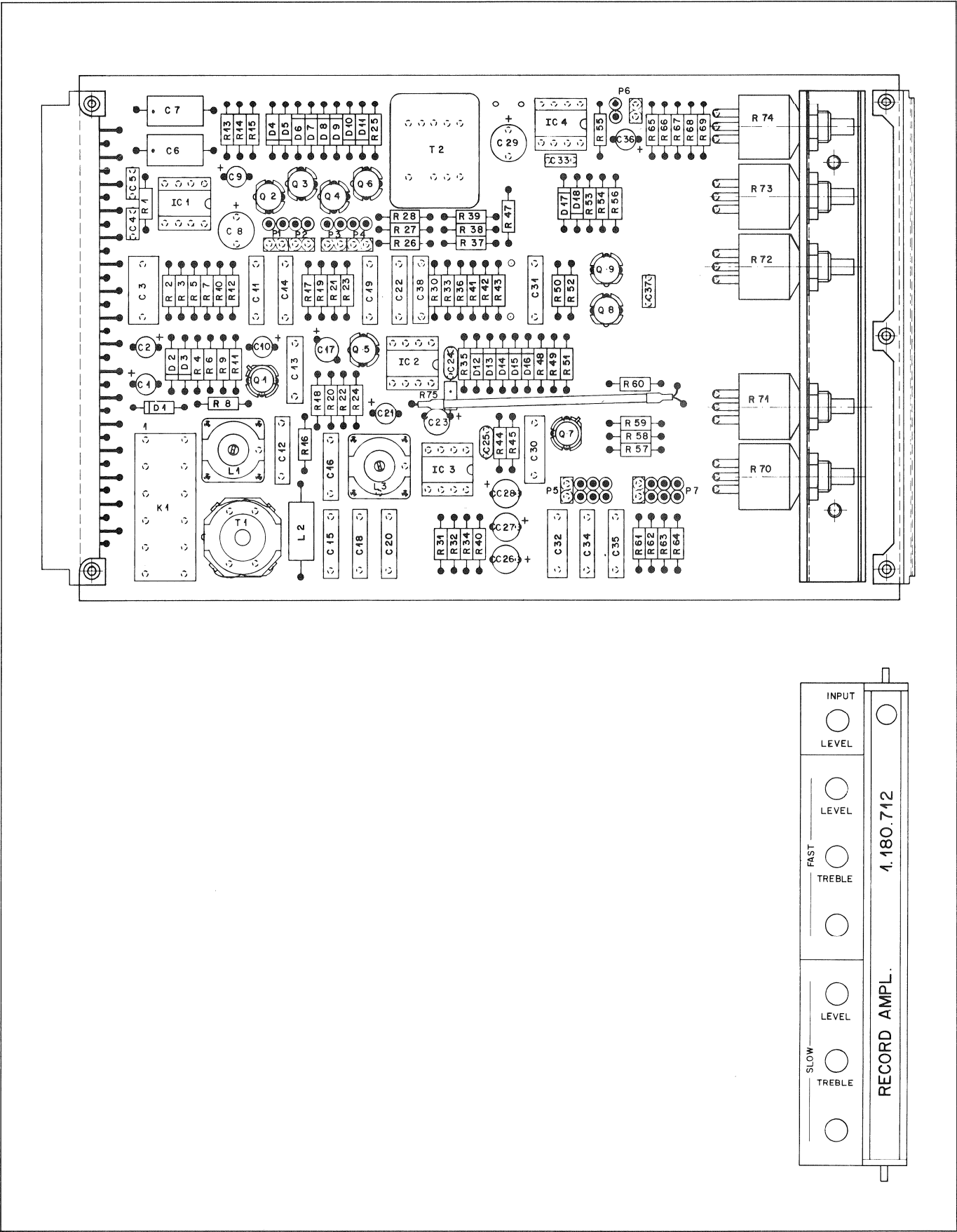
RECORD AMPLIFIER PCB 1.180.712-00 GR92

GR92

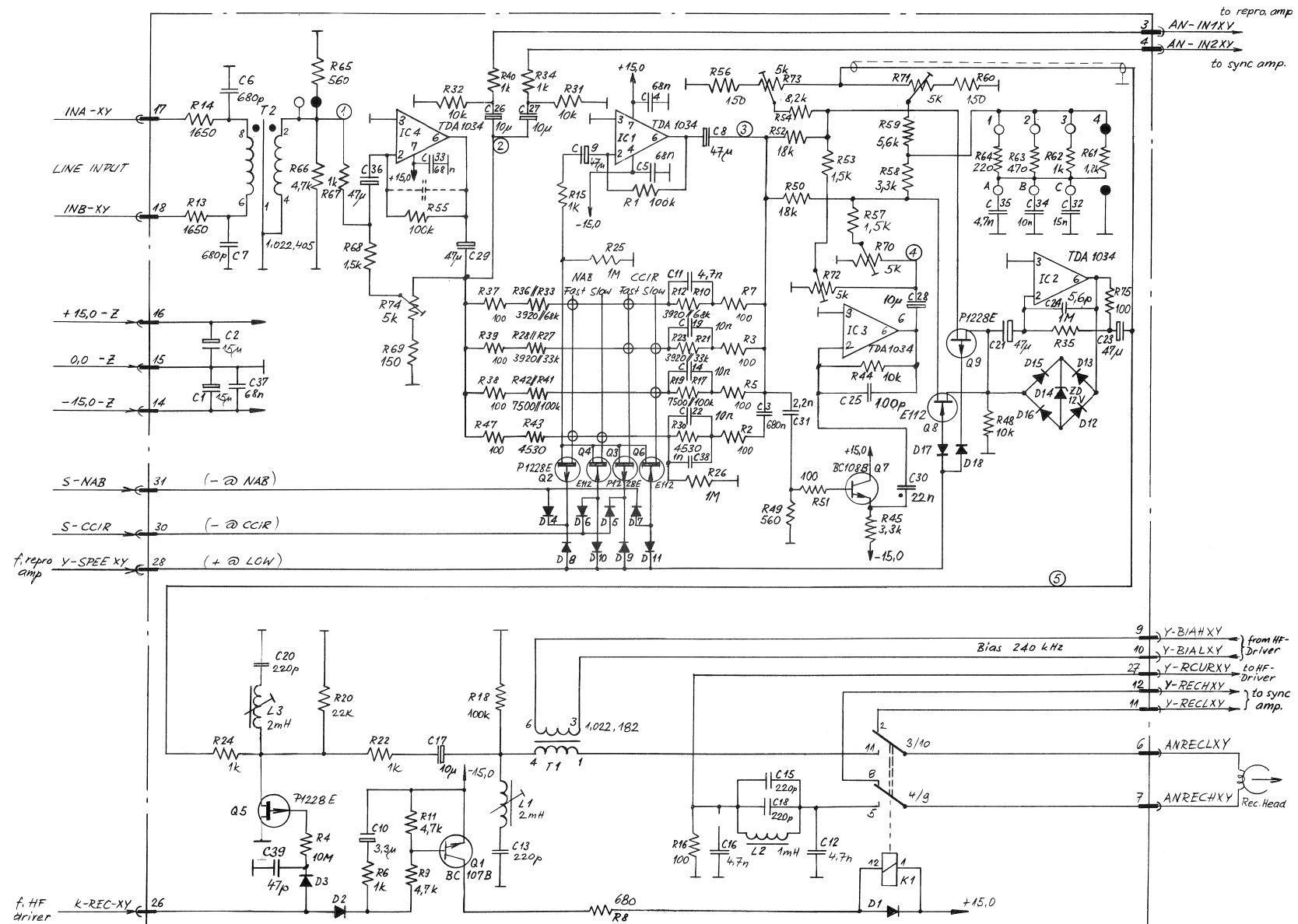


RECORD AMPLIFIER PCB 1.180.712-00 GR92

1.180.712-00
GR92



RECORD AMPLIFIER PCB 1.180.712-00 GR92

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GR92

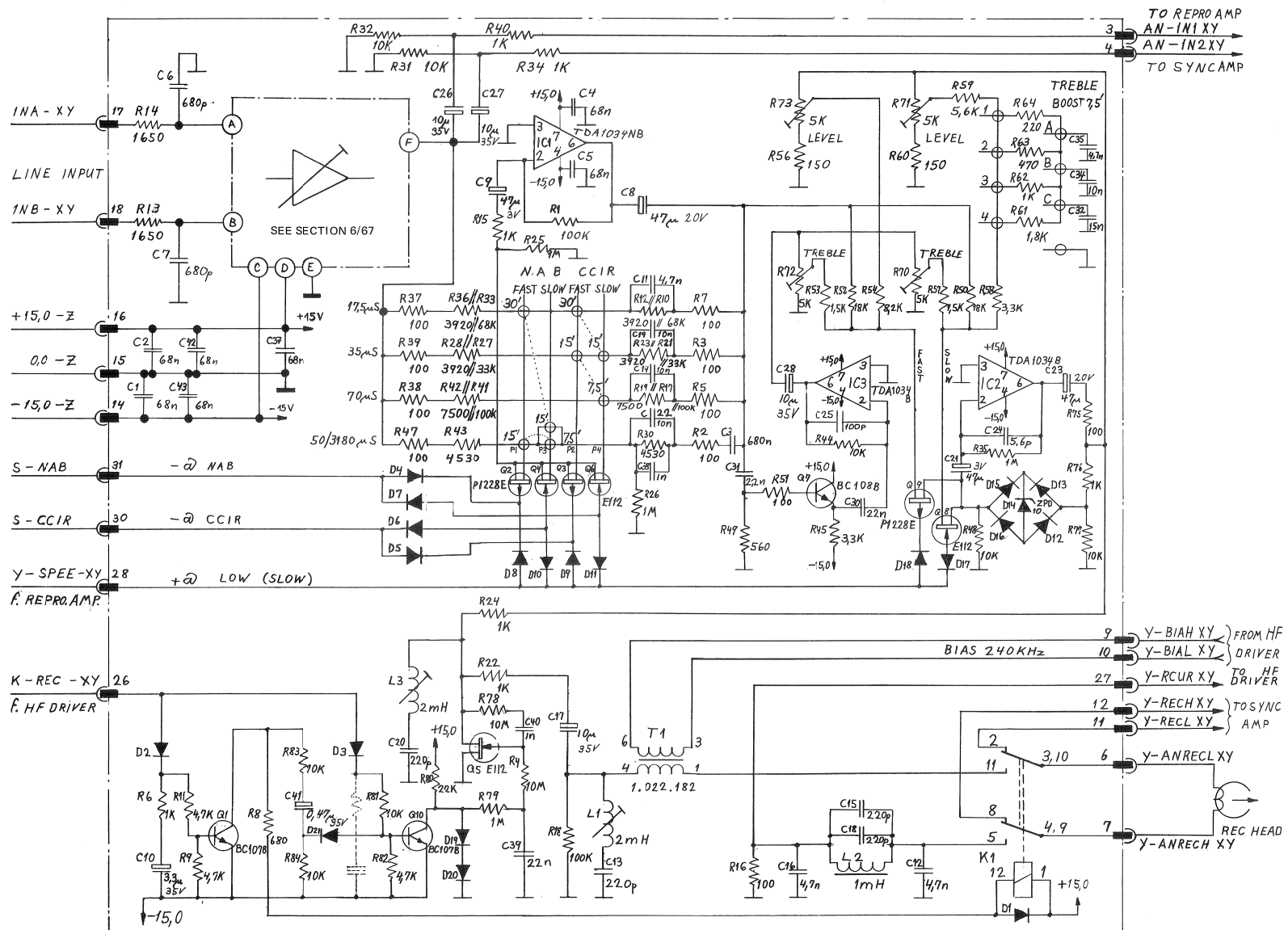
POS NO	PART NO	VALUE	SPECIFICATIONS	EQUIVALENT	MFR
2 40	57 11 46 881	6.82	1/2"	0.25 W	
2 41	57 11 46 972	4.51			
2 42	57 11 46 973	6.82			
2 43	57 11 46 851	4.51			
2 44	57 11 46 852	6.82			
2 45	57 11 46 853	4.51			
2 46	57 11 46 101	600	1/2"		
2 47	57 11 46 102	1000	1/2"		
2 48	57 11 46 103	1000	1/2"		
2 49	57 11 46 104	7.54			
2 50	57 11 46 105	23.8	1/2"		
2 51	57 11 46 106	15.5	1/2"		
2 52	57 11 46 107	4	1/2"		
2 53	57 11 46 108	6.82			
2 54	57 11 46 109	4	1/2"		
2 55	57 11 46 105	154			
2 56	57 11 46 105	154			
2 57	57 11 46 101	22.4	1/2"		
2 58	57 11 46 101	6.82	1/2"		
2 59	57 11 46 101	4.51			
2 60	57 11 46 101	6.82	1/2"		
2 61	57 11 46 101	604	1/2"		
2 62	57 11 46 101	604	1/2"		
2 63	57 11 46 101	6.82	1/2"		
2 64	57 11 46 101	1.6	1/2"		
2 65	57 11 46 101	1.51	1/2"		
2 66	57 11 46 101	6.82	1/2"		
2 67	57 11 46 101	100	1/2"		
2 68	57 11 46 101	600	1/2"		
2 69	57 11 46 101	4.6	1/2"		
2 70	57 11 46 101	1000	1/2"		
2 71	57 11 46 101	7.54	1/2"		
2 72	57 11 46 101	6.82	1/2"		
2 73	57 11 46 101	6.82	1/2"		
2 74	57 11 46 101	154	1/2"		
2 75	57 11 46 101	154	1/2"		
2 76	57 11 46 101	8.34	1/2"		
2 77	57 11 46 101	100	1/2"		
2 78	57 11 46 101	100	1/2"		
2 79	57 11 46 101	5.50	1/2"		
2 80	57 11 46 101	154	1/2"		
2 81	57 11 46 101	1000	1/2"		
2 82	57 11 46 101	7.54	1/2"		
2 83	57 11 46 101	6.82	1/2"		
2 84	57 11 46 101	154	1/2"		
2 85	57 11 46 101	154	1/2"		
2 86	57 11 46 101	8.34	1/2"		
2 87	57 11 46 101	100	1/2"		
2 88	57 11 46 101	100	1/2"		
2 89	57 11 46 101	5.50	1/2"		
2 90	57 11 46 101	154	1/2"		
2 91	57 11 46 101	1000	1/2"		
2 92	57 11 46 101	7.54	1/2"		
2 93	57 11 46 101	6.82	1/2"		
2 94	57 11 46 101	154	1/2"		
2 95	57 11 46 101	154	1/2"		
2 96	57 11 46 101	8.34	1/2"		
2 97	57 11 46 101	100	1/2"		
2 98	57 11 46 101	100	1/2"		
2 99	57 11 46 101	5.50	1/2"		
2 100	57 11 46 101	154	1/2"		
2 101	57 11 46 101	1000	1/2"		
2 102	57 11 46 101	7.54	1/2"		
2 103	57 11 46 101	6.82	1/2"		
2 104	57 11 46 101	154	1/2"		
2 105	57 11 46 101	154	1/2"		
2 106	57 11 46 101	8.34	1/2"		
2 107	57 11 46 101	100	1/2"		
2 108	57 11 46 101	100	1/2"		
2 109	57 11 46 101	5.50	1/2"		
2 110	57 11 46 101	154	1/2"		
2 111	57 11 46 101	1000	1/2"		
2 112	57 11 46 101	7.54	1/2"		
2 113	57 11 46 101	6.82	1/2"		
2 114	57 11 46 101	154	1/2"		
2 115	57 11 46 101	154	1/2"		
2 116	57 11 46 101	8.34	1/2"		
2 117	57 11 46 101	100	1/2"		
2 118	57 11 46 101	100	1/2"		
2 119	57 11 46 101	5.50	1/2"		
2 120	57 11 46 101	154	1/2"		
2 121	57 11 46 101	1000	1/2"		
2 122	57 11 46 101	7.54	1/2"		
2 123	57 11 46 101	6.82	1/2"		
2 124	57 11 46 101	154	1/2"		
2 125	57 11 46 101	154	1/2"		
2 126	57 11 46 101	8.34	1/2"		
2 127	57 11 46 101	100	1/2"		
2 128	57 11 46 101	100	1/2"		
2 129	57 11 46 101	5.50	1/2"		
2 130	57 11 46 101	154	1/2"		
2 131	57 11 46 101	1000	1/2"		
2 132	57 11 46 101	7.54	1/2"		
2 133	57 11 46 101	6.82	1/2"		
2 134	57 11 46 101	154	1/2"		
2 135	57 11 46 101	154	1/2"		
2 136	57 11 46 101	8.34	1/2"		
2 137	57 11 46 101	100	1/2"		
2 138	57 11 46 101	100	1/2"		
2 139	57 11 46 101	5.50	1/2"		
2 140	57 11 46 101	154	1/2"		
2 141	57 11 46 101	1000	1/2"		
2 142	57 11 46 101	7.54	1/2"		
2 143	57 11 46 101	6.82	1/2"		
2 144	57 11 46 101	154	1/2"		
2 145	57 11 46 101	154	1/2"		
2 146	57 11 46 101	8.34	1/2"		
2 147	57 11 46 101	100	1/2"		
2 148	57 11 46 101	100	1/2"		
2 149	57 11 46 101	5.50	1/2"		
2 150	57 11 46 101	154	1/2"		
2 151	57 11 46 101	1000	1/2"		
2 152	57 11 46 101	7.54	1/2"		
2 153	57 11 46 101	6.82	1/2"		
2 154	57 11 46 101	154	1/2"		
2 155	57 11 46 101	154	1/2"		
2 156	57 11 46 101	8.34	1/2"		
2 157	57 11 46 101	100	1/2"		
2 158	57 11 46 101	100	1/2"		
2 159	57 11 46 101	5.50	1/2"		
2 160	57 11 46 101	154	1/2"		
2 161	57 11 46 101	1000	1/2"		
2 162	57 11 46 101	7.54	1/2"		
2 163	57 11 46 101	6.82	1/2"		
2 164	57 11 46 101	154	1/2"		
2 165	57 11 46 101	154	1/2"		
2 166	57 11 46 101	8.34	1/2"		
2 167	57 11 46 101	100	1/2"		
2 168	57 11 46 101	100	1/2"		
2 169	57 11 46 101	5.50	1/2"		
2 170	57 11 46 101	154	1/2"		
2 171	57 11 46 101	1000	1/2"		
2 172	57 11 46 101	7.54	1/2"		
2 173	57 11 46 101	6.82	1/2"		
2 174	57 11 46 101	154	1/2"		
2 175	57 11 46 101	154	1/2"		
2 176	57 11 46 101	8.34	1/2"		
2 177	57 11 46 101	100	1/2"		
2 178	57 11 46 101	100	1/2"		
2 179	57 11 46 101	5.50	1/2"		
2 180	57 11 46 101	154	1/2"		
2 181	57 11 46 101	1000	1/2"		
2 182	57 11 46 101	7.54	1/2"		
2 183	57 11 46 101	6.82	1/2"		
2 184	57 11 46 101	154	1/2"		
2 185	57 11 46 101	154	1/2"		
2 186	57 11 46 101	8.34	1/2"		
2 187	57 11 46 101	100	1/2"		
2 188	57 11 46 101	100	1/2"		
2 189	57 11 46 101	5.50	1/2"		
2 190	57 11 46 101	154	1/2"		
2 191	57 11 46 101	1000	1/2"		
2 192	57 11 46 101	7.54	1/2"		
2 193	57 11 46 101	6.82	1/2"		
2 194	57 11 46 101	154	1/2"		
2 195	57 11 46 101	154	1/2"		
2 196	57 11 46 101	8.34	1/2"		
2 197	57 11 46 101	100	1/2"		
2 198	57 11 46 101	100	1/2"		
2 199	57 11 46 101	5.50	1/2"		
2 200	57 11 46 101	154	1/2"		
2 201	57 11 46 101	1000	1/2"		
2 202	57 11 46 101	7.54	1/2"		
2 203	57 11 46 101	6.82	1/2"		
2 204	57 11 46 101	154	1/2"		
2 205	57 11 46 101	154	1/2"		
2 206	57 11 46 101	8.34	1/2"		
2 207	57 11 46 101	100	1/2"		
2 208	57 11 46 101	100	1/2"		
2 209	57 11 46 101	5.50	1/2"		
2 210	57 11 46 101	154	1/2"		
2 211	57 11 46 101	1000	1/2"		
2 212	57 11 46 101	7.54	1/2"		
2 213	57 11 46 101	6.82	1/2"		
2 214	57 11 46 101	154	1/2"		
2 215	57 11 46 101	154	1/2"		
2 216	57 11 46 101	8.34	1/2"		
2 217	57 11 46 101	100	1/2"		
2 218	57 11 46 101	100	1/2"		
2 219	57 11 46 101	5.50	1/2"		
2 220	57 11 46 101	154	1/2"		
2 221	57 11 46 101	1000	1/2"		
2 222	57 11 46 101	7.54	1/2"		
2 223	57 11 46 101	6.82	1/2"		
2 224	57 11 46 101	154	1/2"		
2 225	57 11 46 101	154	1/2"		
2 226	57 11 46 101	8.34	1/2"		
2 227	57 11 46 101	100	1/2"		
2 228	57 11 46 101	100	1/2"		
2 229	57 11 46 101	5.50	1/2"		
2 230	57 11 46 101	154	1/2"		
2 231	57 11 46 101	1000	1/2"		
2 232	57 11 46 101	7.54	1/2"		
2 233	57 11 46 101	6.82	1/2"		
2 234	57 11 46 101	154	1/2"		
2 235	57 11 46 101	154	1/2"		
2 236	57 11 46 101	8.34	1/2"		
2 237	57 11 46 101	100	1/2"		
2 238	57 11 46 101	100	1/2"		
2 239	57 11 46 101	5.50	1/2"		
2 240	57 11 46 101	154	1/2"		
2 241	57 11 46 101	1000	1/2"		
2 242	57 11 46 101	7.54	1/2"		
2 243	57 11 46 101	6.82	1/2"		
2 244	57 11 46 101	154	1/2"		
2 245	57 11 46 101	154	1/2"		
2 246	57 11 46 101	8.34	1/2"		
2 247	57 11 46 101	100	1/2"		
2 248	57 11 46 101	100	1/2"		
2 249	57 11 46 101	5.50	1/2"		
2 250	57 11 46 101	154	1/2"		
2 251	57 11 46 101	1000	1/2"		
2 252	57 11 46 101	7.54	1/2"		
2 253	57 11 46 101	6.82	1/2"		
2 254	57 11 46 101	154	1/2"		
2 255	57 11 46 101	154	1/2"		
2 256	57 11 46 101	8.34	1/2"		
2 257	57 11 46 101	100	1/2"		
2 258	57 11 46 101	100	1/2"		
2 259	57 11 46 101	5.50	1/2"		
2 260	57 11 46 101	154	1/2"		
2 261	57 11 46 101	1000	1/2"		
2 262	57 11 46 101	7.54	1/2"		
2 263	57 11 46 101	6.82	1/2"		</

2.55	57. 11. 116d	took	2%	0.85U			
					③	122.39	10 - 41
					③	2.3.12	10
					③	4.1.70	10
					③	12. APR. 1970	Emmett
					IND	DATE	NAME
STUDER	Record Amplifier					1. 180. 712	PAGE 3 of 4

POS NO	PART NO	VALUE	SPECIFICATIONS	EQUIVALENT	MFR
P 66	57 11 4161	750	1%	0.02W	
P 67	57 11 4162	750			
P 68	57 11 4162	750			
P 69	57 11 4162	864			
P 70	57 11 4161	600			
P 71	57 11 4162	1.2K			
P 72	57 11 4162	14			
P 73	57 11 4162	400			
P 74	57 11 4161	220			
P 75	57 11 4162	750			
P 76	57 11 4162	4.7K			
P 77	57 11 4162	1.5K			
P 78	57 11 4162	1.5K			
P 79	57 11 4161	150	5%	0.02W	
P 79A	57 11 4162	50	10%	0.04W	AR
P 79B	57 11 4162	50			
P 79C	57 11 4162	50			
P 79D	57 11 4162	50			
P 79E	57 11 4162	50	10%	0.04W	AR
P 79F	57 11 4161	100	5%	0.05W	
T 1	1.022, 12K, 0.0				ST
T 2	1.022, 40K, 0.0				ST

[illegible]

RECORD AMPLIFIER PCB 1.180.715 GR92

1.180.715
GR92

The diagram illustrates the internal circuitry of a 4-track stereo tape recorder. Key components include:

- Resistors:** R1 through R74, including variable resistors R18, R4, R76, R78, R79, R80, R81, R82, R83, R84, R85, R86, R87, R88, R89, R90, R91, R92, R93, R94, R95, R96, R97, R98, R99, R100, R101, R102, R103, R104, R105, R106, R107, R108, R109, R110, R111, R112, R113, R114, R115, R116, R117, R118, R119, R120, R121, R122, R123, R124, R125, R126, R127, R128, R129, R130, R131, R132, R133, R134, R135, R136, R137, R138, R139, R140, R141, R142, R143, R144, R145, R146, R147, R148, R149, R150, R151, R152, R153, R154, R155, R156, R157, R158, R159, R160, R161, R162, R163, R164, R165, R166, R167, R168, R169, R170, R171, R172, R173, R174, R175, R176, R177, R178, R179, R180, R181, R182, R183, R184, R185, R186, R187, R188, R189, R190, R191, R192, R193, R194, R195, R196, R197, R198, R199, R200, R201, R202, R203, R204, R205, R206, R207, R208, R209, R210, R211, R212, R213, R214, R215, R216, R217, R218, R219, R220, R221, R222, R223, R224, R225, R226, R227, R228, R229, R230, R231, R232, R233, R234, R235, R236, R237, R238, R239, R240, R241, R242, R243, R244, R245, R246, R247, R248, R249, R250, R251, R252, R253, R254, R255, R256, R257, R258, R259, R260, R261, R262, R263, R264, R265, R266, R267, R268, R269, R270, R271, R272, R273, R274, R275, R276, R277, R278, R279, R280, R281, R282, R283, R284, R285, R286, R287, R288, R289, R290, R291, R292, R293, R294, R295, R296, R297, R298, R299, R300, R301, R302, R303, R304, R305, R306, R307, R308, R309, R310, R311, R312, R313, R314, R315, R316, R317, R318, R319, R320, R321, R322, R323, R324, R325, R326, R327, R328, R329, R330, R331, R332, R333, R334, R335, R336, R337, R338, R339, R340, R341, R342, R343, R344, R345, R346, R347, R348, R349, R350, R351, R352, R353, R354, R355, R356, R357, R358, R359, R360, R361, R362, R363, R364, R365, R366, R367, R368, R369, R370, R371, R372, R373, R374, R375, R376, R377, R378, R379, R380, R381, R382, R383, R384, R385, R386, R387, R388, R389, R390, R391, R392, R393, R394, R395, R396, R397, R398, R399, R400, R401, R402, R403, R404, R405, R406, R407, R408, R409, R410, R411, R412, R413, R414, R415, R416, R417, R418, R419, R420, R421, R422, R423, R424, R425, R426, R427, R428, R429, R430, R431, R432, R433, R434, R435, R436, R437, R438, R439, R440, R441, R442, R443, R444, R445, R446, R447, R448, R449, R450, R451, R452, R453, R454, R455, R456, R457, R458, R459, R460, R461, R462, R463, R464, R465, R466, R467, R468, R469, R470, R471, R472, R473, R474, R475, R476, R477, R478, R479, R480, R481, R482, R483, R484, R485, R486, R487, R488, R489, R490, R491, R492, R493, R494, R495, R496, R497, R498, R499, R500, R501, R502, R503, R504, R505, R506, R507, R508, R509, R510, R511, R512, R513, R514, R515, R516, R517, R518, R519, R520, R521, R522, R523, R524, R525, R526, R527, R528, R529, R530, R531, R532, R533, R534, R535, R536, R537, R538, R539, R540, R541, R542, R543, R544, R545, R546, R547, R548, R549, R550, R551, R552, R553, R554, R555, R556, R557, R558, R559, R560, R561, R562, R563, R564, R565, R566, R567, R568, R569, R570, R571, R572, R573, R574, R575, R576, R577, R578, R579, R580, R581, R582, R583, R584, R585, R586, R587, R588, R589, R590, R591, R592, R593, R594, R595, R596, R597, R598, R599, R600, R601, R602, R603, R604, R605, R606, R607, R608, R609, R610, R611, R612, R613, R614, R615, R616, R617, R618, R619, R620, R621, R622, R623, R624, R625, R626, R627, R628, R629, R630, R631, R632, R633, R634, R635, R636, R637, R638, R639, R640, R641, R642, R643, R644, R645, R646, R647, R648, R649, R650, R651, R652, R653, R654, R655, R656, R657, R658, R659, R660, R661, R662, R663, R664, R665, R666, R667, R668, R669, R670, R671, R672, R673, R674, R675, R676, R677, R678, R679, R680, R681, R682, R683, R684, R685, R686, R687, R688, R689, R690, R691, R692, R693, R694, R695, R696, R697, R698, R699, R700, R701, R702, R703, R704, R705, R706, R707, R708, R709, R710, R711, R712, R713, R714, R715, R716, R717, R718, R719, R720, R721, R722, R723, R724, R725, R726, R727, R728, R729, R730, R731, R732, R733, R734, R735, R736, R737, R738, R739, R740, R741, R742, R743, R744, R745, R746, R747, R748, R749, R750, R751, R752, R753, R754, R755, R756, R757, R758, R759, R760, R761, R762, R763, R764, R765, R766, R767, R768, R769, R770, R771, R772, R773, R774, R775, R776, R777, R778, R779, R780, R781, R782, R783, R784, R785, R786, R787, R788, R789, R790, R791, R792, R793, R794, R795, R796, R797, R798, R799, R800, R801, R802, R803, R804, R805, R806, R807, R808, R809, R810, R811, R812, R813, R814, R815, R816, R817, R818, R819, R820, R821, R822, R823, R824, R825, R826, R827, R828, R829, R830, R831, R832, R833, R834, R835, R836, R837, R838, R839, R840, R841, R842, R843, R844, R845, R846, R847, R848, R849, R850, R851, R852, R

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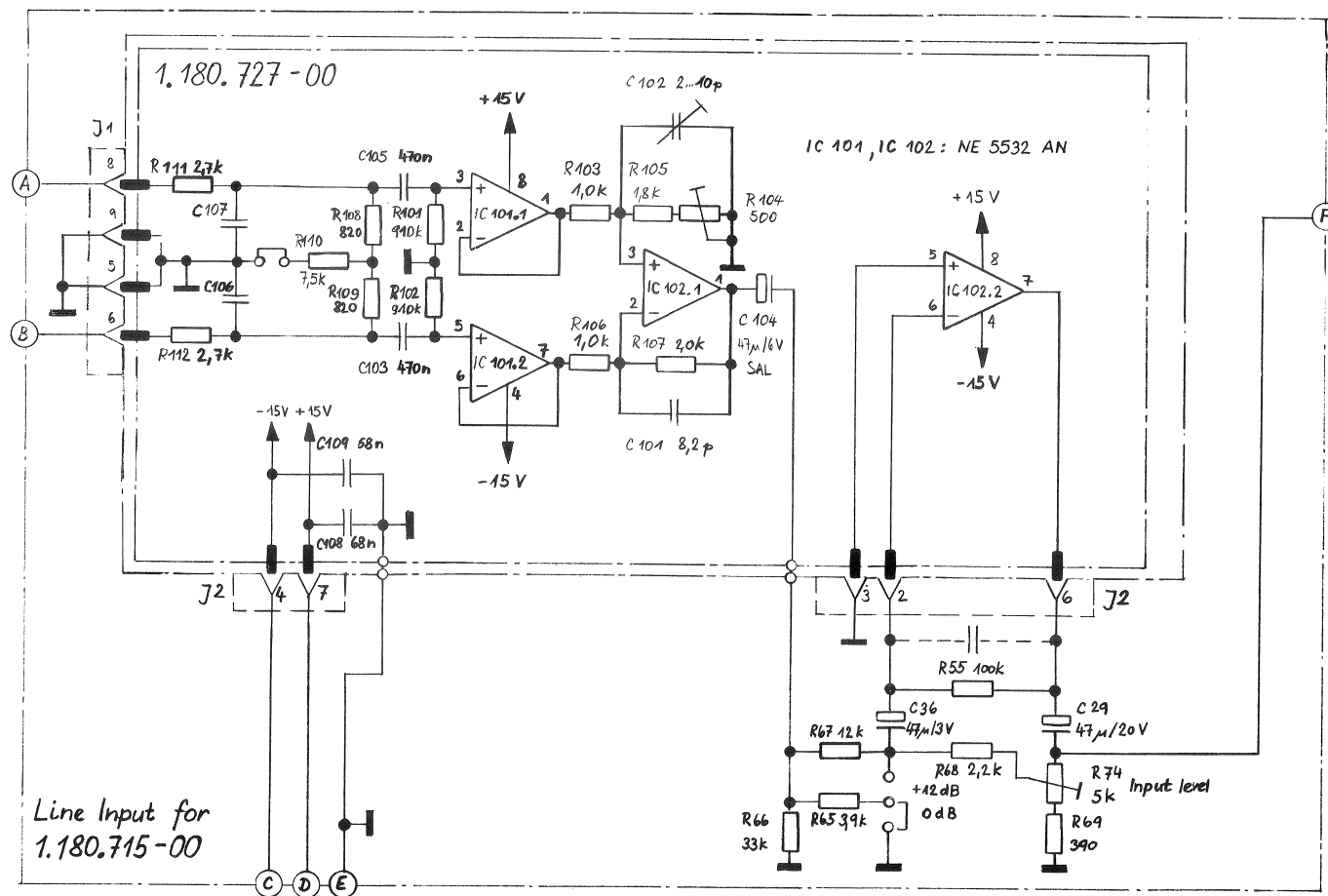
INC.	PDS.HD.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT
Note 1	- Relais:			
	2 Form A cont. (make), 2 Form B cont. (break)			
	Snour 105 nr=1 52 - 2AV			
Note 2	- Potentiometer:			
	5 KOhm, 10K, 0.5W, lin.			
	Allen Bradley Nr=1 MA 1G Q28 S 502 UA			
Note 2	- Potentiometer:			
	5 KOhm, 10K, 0.5W -log			
	Allen Bradley Nr=1 MA 1G Q28 S 502 BA			
LeCeramic	EI=Electrolytic, Te=Tantal, PnPolystyrol, PE=Polyester			
PC=Polycarbonat				
MANUFACTURER:	Pz=Philips, Sig=Signetics, NS=National Semiconductor,			
	Pct=Motorola, Sin=Siemens, TS=Teledyne, Sk=Siliconix,			
	GesUsener			

CRIG 82/09/09

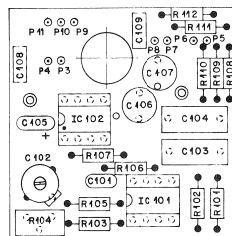
C I U D E R 82/06/15 ST REGR AMPLIFIER TRANSRES 1 180 716 00 PAGE

LINE INPUT AMPLIFIER PCB 1.180.727

1.180.727



1.180.727



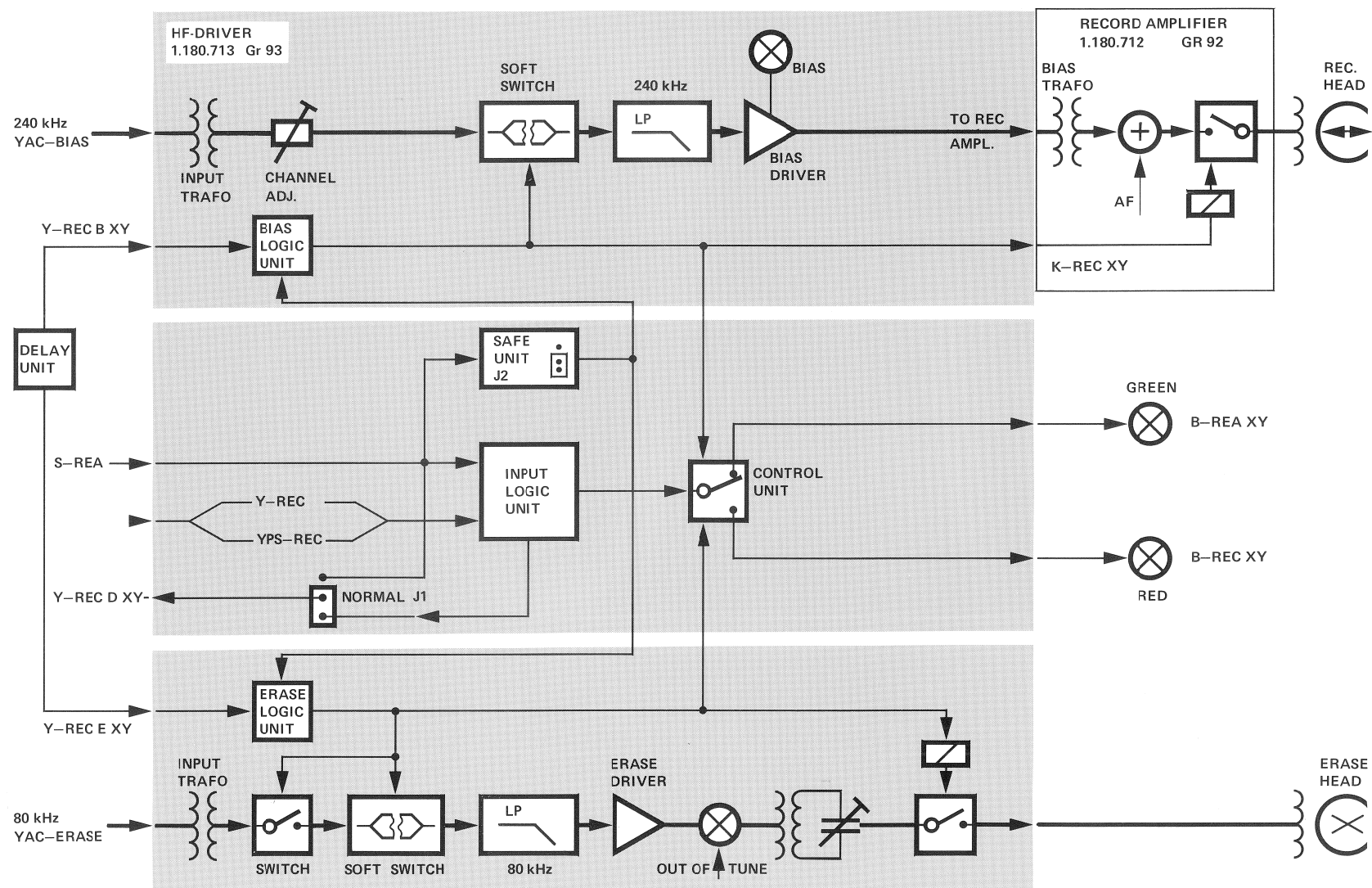
IND.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
C-0101	59.94.1829	82 pf			
C-0102	59.1a0101	2-10 pf		Triamex	
C-0103	59.02.0474	470 pf			
C-0104	59.02.0475	870 pf			
C-0105	59.26.0470	67 pf			
C-0106		not used			PH
C-0107	59.99.0205	not used			
C-0108	59.99.0205	68 pf			
C-0109	59.99.0205	68 pf		-70T	
IC-0101	50.09.0106	NF5532AN			Sigra
IC-0102	50.09.0106	NF5532AN			Sigra
R-2-11	1.012.010.015	5 pin			5T
R-0101	57.11.3934	910 Ohm	1N		
R-0102	57.11.3934	910 Ohm	1N		
R-0103	57.11.3934	100 Ohm	1N		
R-0104	56.01.0701	500 Ohm	Triamex		
R-0105	57.11.3102	1 K Ohm	1N		
R-0106	57.11.3102	1 K Ohm	1N		
R-0107	57.11.3102	1 K Ohm	1N		
R-0108	57.11.3102	1 K Ohm	1N		
R-0109	57.11.3102	820 Ohm	1N		
R-0110	57.11.3102	820 Ohm	1N		
R-0111	57.11.3752	1.5 K Ohm	1N		
R-0112	57.11.3752	2.7 K Ohm	1N		
R-0113	57.11.3752	2.7 K Ohm	1N		

Manufacturer: NS=National Semiconductors, Ph=Philips, Sig=Signetics,
Ra=Raytheon, St=Studer

ORIG 82/06/10

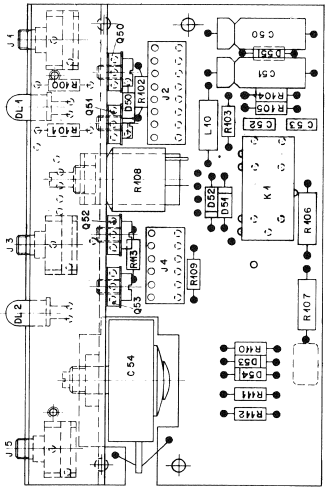
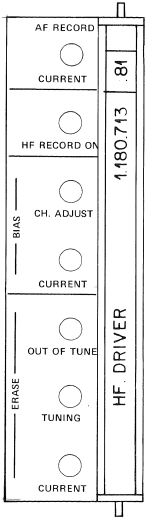
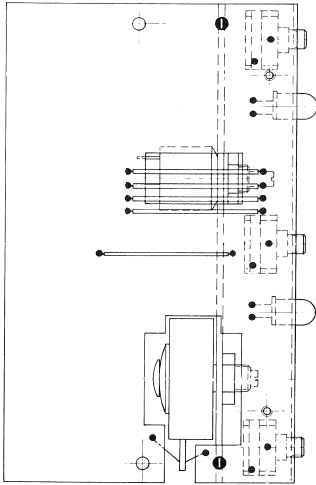
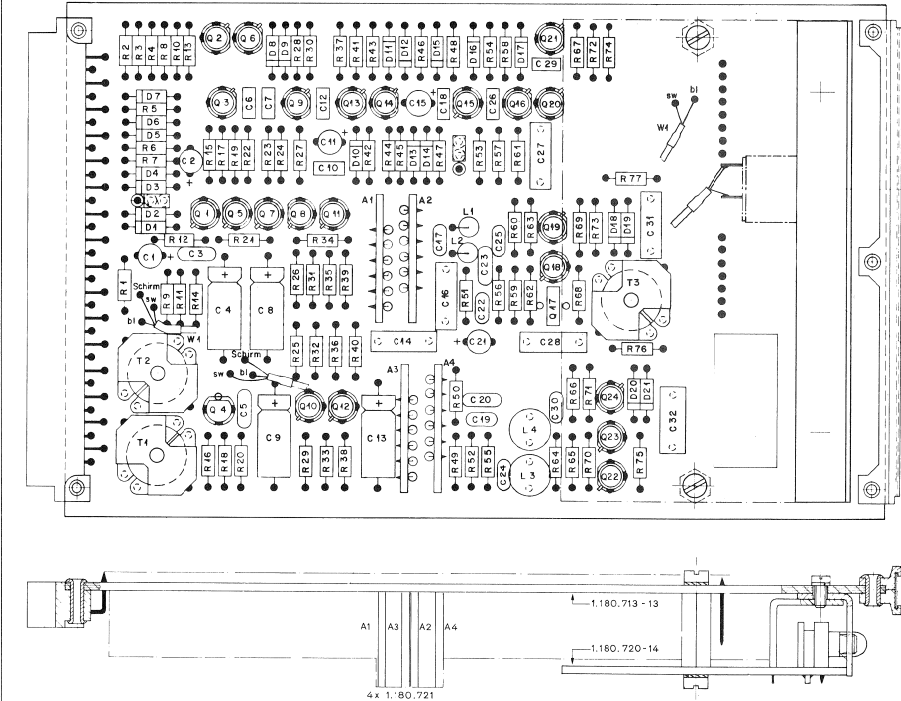
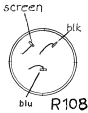
STUDER 02/06/20 RST LINE INPUT AMPLIFIER BOARD 1.180.721.00 PAGE 1

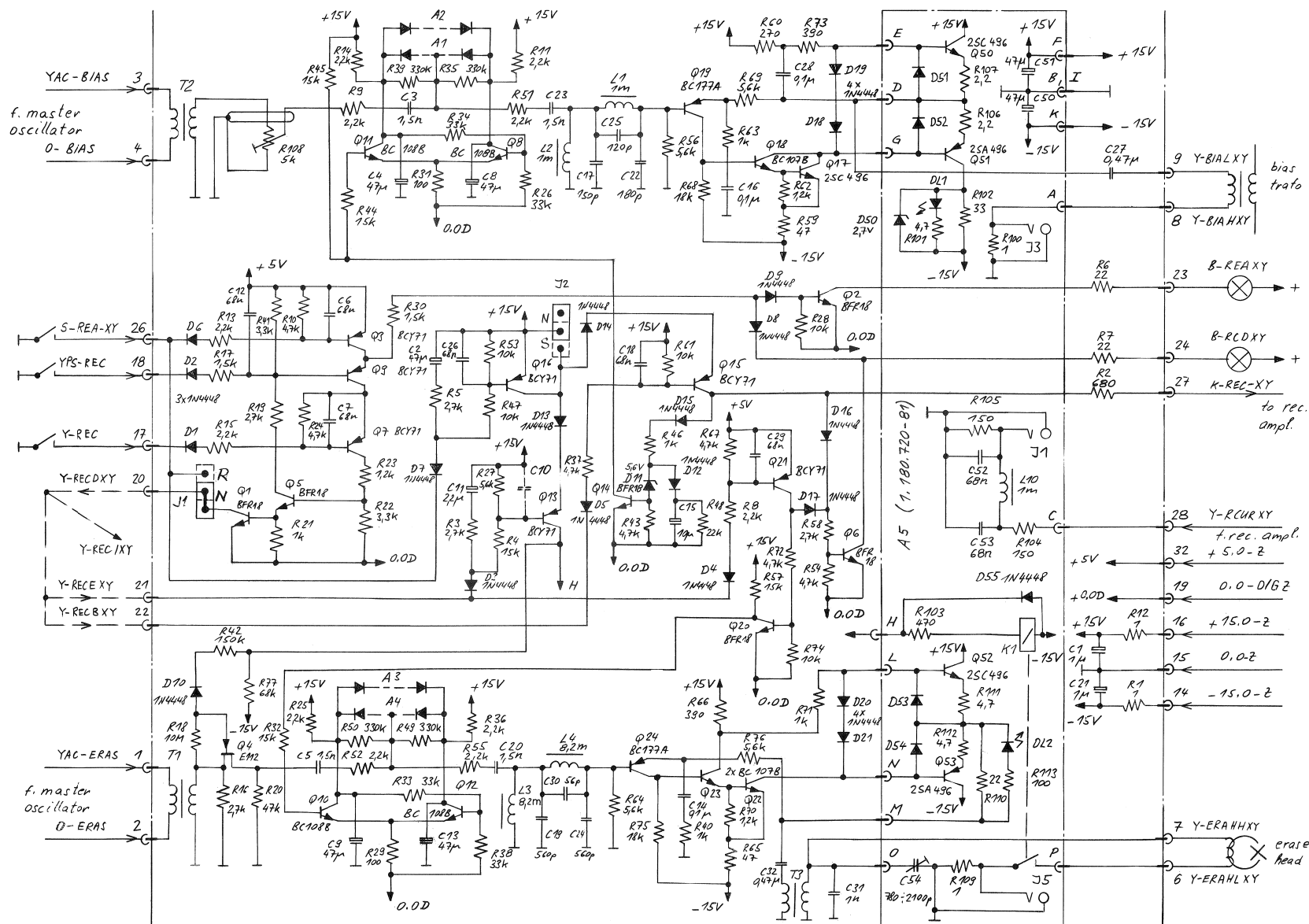
HF-DRIVER PCB 1.180.713-81 GR93

1.180.713-81
GR93

1.180.713-81
GR93

HF-DRIVER PCB 1.180.713-81 GR93





1.180.713-81
GR93

JEP POS NO	PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MFR
R26	57-11-4272	32ka	5%, 0.25W	
R27	55.2	56ka		
R28	103	10ka		
R29	103	100a		
R30	152	15ka		
R31	103	100a		
R32	153	15ka		
R33	213	31ka		
R34	313	31ka		
R35	314	310ka		
R36	222	22ka		
R37	422	42ka		
R38	313	31ka		
R39	314	310ka		
R40	402	40ka		
R41	222	22ka		
R42	154	150ka		
R43	422	42ka		
R44	153	15ka		
R45	153	15ka		
R46	202	20ka		
R47	203	20ka		
R48	223	22ka		
R49	314	310ka		
R50	314	310ka		
R51	222	22ka		
R52	222	22ka		
R53	403	40ka		
R54	422	42ka		
R55	57-11-4272	22ka	5%, 0.25W	

DATE	NAME
5.6.85	<i>[Signature]</i>
3.10.85	<i>[Signature]</i>
16.8.79	<i>[Signature]</i>
20.1.77	<i>[Signature]</i>

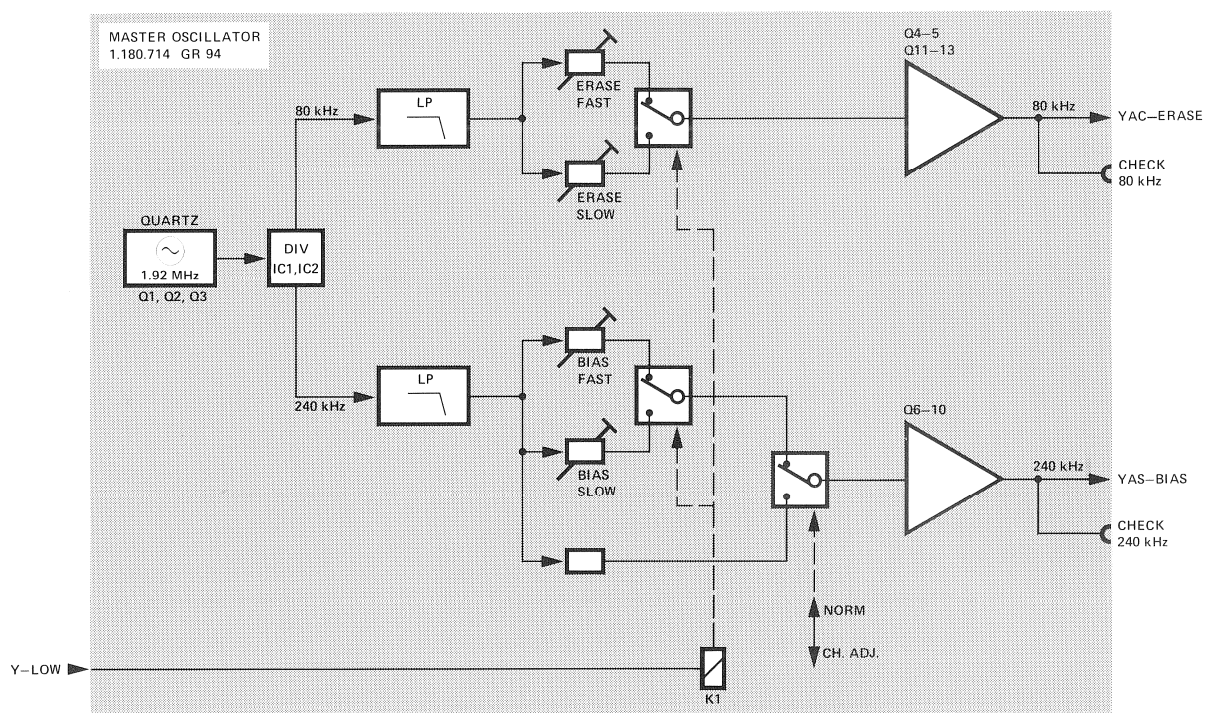
STUDER	HF - Driver	1.180.793-87	PAGE 5 OF 6
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1.180.714-81

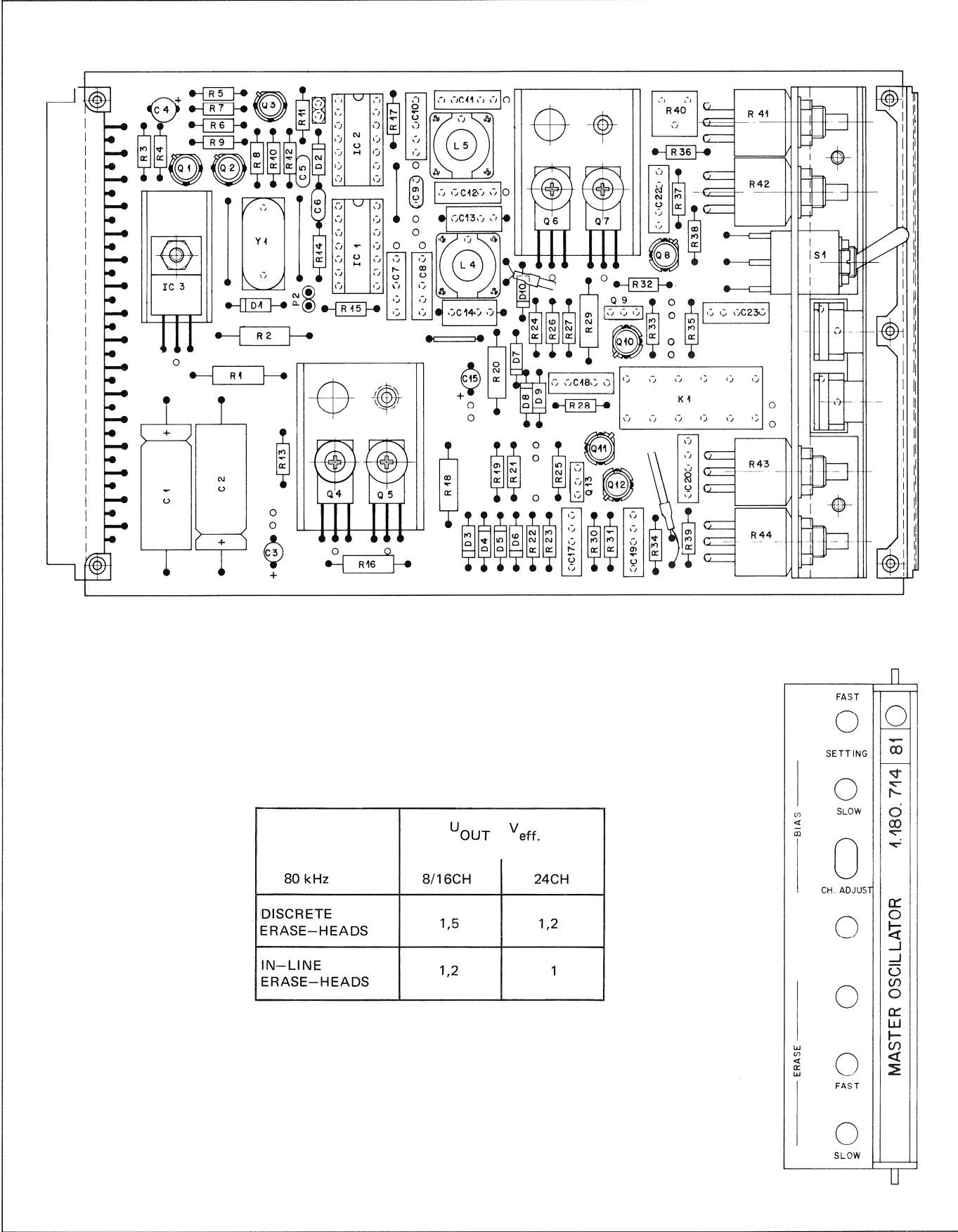
MASTER OSCILLATOR PCB 1.180.714-81 GR94

GR94

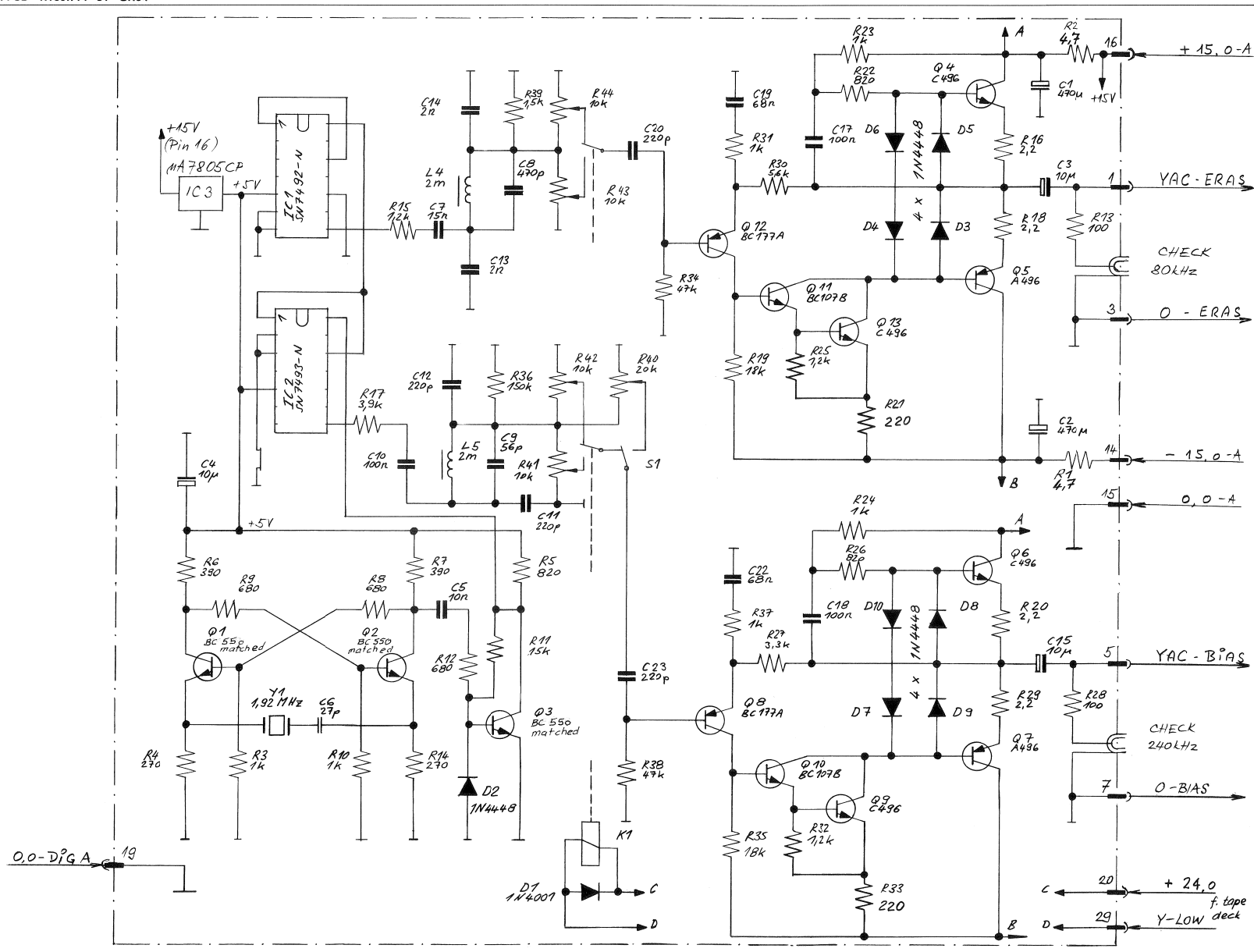


MASTER OSCILLATOR PCB 1.180.714-81 GR94

1.180.714-81
GR94



MASTER OSCILLATOR PCB 1.180.714-81 GR94

1.180.714-81
GR94

MASTER OSCILLATOR PCB 1.180.714-81 GR94

POS NO	PART NO	VALUE	SPECIFICATIONS	EQUIVALENT	MFR
12	-	-	wire bridge		
13	-	-	wire bridge		
14	A022-122	1m H			ST
15	A 022-123	2m H			ST
Q1	50.03.0529	8C550mA6A			
Q2	50.03.0529	8C550mA6A			
Q3	50.03.0529	8C550mA6A			
Q4	50.03.0529	25C936-0	npn	25C496-0	P
Q5	50.03.0529	25A936-0	ppp	BD 436	P
Q6	50.03.0529	25C936-0	npn	25A936-0	P
Q7	50.03.0529	25C936-0	npn	BD 436	P
Q8	50.03.0529	8C122A			
Q9	50.03.0529	25C936-0	npn		
Q10	50.03.0529	8C103A			
Q11	50.03.0529	8C103A			
Q12	50.03.0529	25C936-0	npn		
R1	50.01.5029	9.2A	10% ± 0.5W		
R2	50.01.5029	9.2A	10% ± 0.5W		
R3	50.01.5029	10A	5% ± 0.5W		
R4	50.01.5029	10A			
R5	50.01.5029	10A			
R6	50.01.5029	10A			
R7	50.01.5029	10A			
R8	50.01.5029	10A			
R9	50.01.5029	10A			
R10	50.01.5029	10A			
R11	50.01.5029	10A			
R12	50.01.5029	10A			
R13	50.01.5029	10A			
R14	50.01.5029	10A			
R15	50.01.5029	10A	5% ± 0.5W		
R16	50.01.5029	10A	- 0.5W		
R17	50.01.5029	10A	0.5W		
R18	50.01.5029	10A	0.5W		
R19	50.01.5029	10A	0.5W		
R20	50.01.5029	10A	0.5W		
R21	50.01.5029	10A	0.5W		
R22	50.01.5029	10A	0.5W		
R23	50.01.5029	10A	0.5W		
R24	50.01.5029	10A	0.5W		
R25	50.01.5029	10A	0.5W		
R26	50.01.5029	10A	0.5W		
R27	50.01.5029	10A	0.5W		
R28	50.01.5029	10A	0.5W		
R29	50.01.5029	10A	0.5W		
R30	50.01.5029	10A	0.5W		
R31	50.01.5029	10A	0.5W		
R32	50.01.5029	10A	0.5W		
R33	50.01.5029	10A	0.5W		
R34	50.01.5029	10A	0.5W		
R35	50.01.5029	10A	0.5W		
R36	50.01.5029	10A	0.5W		
R37	50.01.5029	10A	0.5W		
R38	50.01.5029	10A	0.5W		
R39	50.01.5029	10A	0.5W		
R40	50.01.5029	10A	0.5W		
R41	50.01.5029	10A	0.5W		
R42	50.01.5029	10A	0.5W		
R43	50.01.5029	10A	0.5W		
R44	50.01.5029	10A	0.5W		
R45	50.01.5029	10A	0.5W		
R46	50.01.5029	10A	0.5W		
R47	50.01.5029	10A	0.5W		
R48	50.01.5029	10A	0.5W		
R49	50.01.5029	10A	0.5W		
R50	50.01.5029	10A	0.5W		
R51	50.01.5029	10A	0.5W		
R52	50.01.5029	10A	0.5W		
R53	50.01.5029	10A	0.5W		
R54	50.01.5029	10A	0.5W		
R55	50.01.5029	10A	0.5W		
R56	50.01.5029	10A	0.5W		
R57	50.01.5029	10A	0.5W		
R58	50.01.5029	10A	0.5W		
R59	50.01.5029	10A	0.5W		
R60	50.01.5029	10A	0.5W		
R61	50.01.5029	10A	0.5W		
R62	50.01.5029	10A	0.5W		
R63	50.01.5029	10A	0.5W		
R64	50.01.5029	10A	0.5W		
R65	50.01.5029	10A	0.5W		
R66	50.01.5029	10A	0.5W		
R67	50.01.5029	10A	0.5W		
R68	50.01.5029	10A	0.5W		
R69	50.01.5029	10A	0.5W		
R70	50.01.5029	10A	0.5W		
R71	50.01.5029	10A	0.5W		
R72	50.01.5029	10A	0.5W		
R73	50.01.5029	10A	0.5W		
R74	50.01.5029	10A	0.5W		
R75	50.01.5029	10A	0.5W		
R76	50.01.5029	10A	0.5W		
R77	50.01.5029	10A	0.5W		
R78	50.01.5029	10A	0.5W		
R79	50.01.5029	10A	0.5W		
R80	50.01.5029	10A	0.5W		
R81	50.01.5029	10A	0.5W		
R82	50.01.5029	10A	0.5W		
R83	50.01.5029	10A	0.5W		
R84	50.01.5029	10A	0.5W		
R85	50.01.5029	10A	0.5W		
R86	50.01.5029	10A	0.5W		
R87	50.01.5029	10A	0.5W		
R88	50.01.5029	10A	0.5W		
R89	50.01.5029	10A	0.5W		
R90	50.01.5029	10A	0.5W		
R91	50.01.5029	10A	0.5W		
R92	50.01.5029	10A	0.5W		
R93	50.01.5029	10A	0.5W		
R94	50.01.5029	10A	0.5W		
R95	50.01.5029	10A	0.5W		
R96	50.01.5029	10A	0.5W		
R97	50.01.5029	10A	0.5W		
R98	50.01.5029	10A	0.5W		
R99	50.01.5029	10A	0.5W		
R100	50.01.5029	10A	0.5W		
STUDER					
Master oscillator					
1190.714-81 7.95					

AB = ALLEN BRADLEY		(B)	1.2.2V	F
SP = SPECTROL		(S)	6.2.2	M 91
PL = PRESSLEY		(P)	11.13.78	10 91
ST = STUDER		(T)	30.3.78	4.5.61
T = TADRIRAN		(O)		
		IND	DATE	NAME
STUDER	Master oscillator		1.180.714-81	PAGE 3 of 2

* STUDER *

* WIRING *

SECTION 6/77

P A G E 1 O F 77

TITLE: TAPE RECORDER ***STUDER A800*** AUDIO SECTION INDEX: 4 DATE OF ORIGIN: 80/01/15
***** DATE OF PRCC.: 83/03/23

OPTIONS IN EFFECT: LOCLIS, SIGLIS, ALLCOL

SIGNALS: TOTAL: 1002
USED: 613
UNUSEC: 389

DIAGNOSTICS GENERATED: N O N E

TOTAL GRUPS: 34
TOTAL ELEMENTS: 196
TOTAL PINS: 3821
TOTAL UNUSEC PINS: 6E8
MULTIPLE PINS: 0

GROUP NCDE = *
INTER GRUP NCDE = #
DIRECT WIRE TC # = <
WIRING NOT CCPUTED = 2

* STUDER * L O C A T I O N P I N L I S T * 83/03/23 * 11:21 * P A G E 2 *

TAPE RECORDER ***STUDER A800*** AUDIO SECTION 8C/01/15

GR: 52 1.180.653.00
PREAMPLIFIER UNIT

EL: 01 CONN. REP. HEAD CH01-16 J01

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
R	01	0	ANREPH02	2			
R	02	0	ANREPL02	0			
R	03	0	ANREPH05	5			
R	04	0	ANREPL05	0			
R	05	0	ANREPH08	8			
R	06	0	ANREPL08	0			
R	07	0	ANREPH11	3			
R	08	0	ANREPL11	0			
R	09	0	ANREPH14	6			
R	10	0	ANREPL14	0			
R	11	0					
R	12	0					
R	13	0					
R	14	0					
R	15	0					
R	16	0	ANREPH01	1			
R	17	0	ANREPL01	0			
R	18	0	ANREPH04	4			
R	19	0	ANREPL04	0			
R	20	0	ANREPH07	7			
R	21	0	ANREPL07	0			
R	22	0	ANREPH10	2			
R	23	0	ANREPL10	0			
R	24	0	ANREPH13	5			
R	25	0	ANREPL13	0			
R	26	0	ANREPH16	8			
R	27	0	ANREPL16	0			
R	28	0					
R	29	0					
R	30	0					
R	31	0	ANREPH03	3			
R	32	0	ANREPL03	0			
R	33	0	ANREPH06	6			
R	34	0	ANREPL06	0			
R	35	0	ANREPH09	1			
R	36	0	ANREPL09	0			
R	37	0	ANREPH12	4			
R	38	0	ANREPL12	0			
R	39	0	ANREPH15	7			
R	40	0	ANREPL15	0			
R	41	0					
R	42	0					
R	43	0	ANREPC0H	0			
R	44	0	ANREPCOL	6			

EL: 02 CONN. REP. HEAD CH17-32 J02

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
R	01	0	ANREPH18	2			
R	02	0	ANREPL18	0			

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GR: 52 (CONTINUATION)
PREAMPLIFIER UNIT

EL: 02 (CONTINUATION)

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
R	03	0	ANREPH21	5			
R	04	0	ANREPL21	0			
R	05	0	ANREPH24	E			
R	06	0	ANREPL24	0			
R	07	0	ANREPH27	3			
R	08	0	ANREPL27	C			
R	09	0	ANREPH30	6			
R	10	0	ANREPL30	0			
R	11	0					
R	12	0					
R	13	0					
R	14	0					
R	15	0					
R	16	0	ANREPH17	1			
R	17	0	ANREPL17	C			
R	18	0	ANREPH20	4			
R	19	0	ANREPL20	0			
R	20	0	ANREPH23	7			
R	21	0	ANREPL23	0			
R	22	0	ANREPH26	2			
R	23	0	ANREPL26	0			
R	24	0	ANREPH29	5			
R	25	0	ANREPL29	0			
R	26	0	ANREPH32	8			
R	27	0	ANREPL32	0			
R	28	0					
R	29	0					
R	30	0					
R	31	0	ANREPH19	3			
R	32	0	ANREPL19	0			
R	33	0	ANREPH22	6			
R	34	0	ANREPL22	0			
R	35	0	ANREPH25	1			
R	36	0	ANREPL25	0			
R	37	0	ANREPH28	4			
R	38	0	ANREPL28	0			
R	39	0	ANREPH31	7			
R	40	0	ANREPL31	0			
R	41	0					
R	42	0					
R	43	0					
R	44	0					

EL: 03 CONN. REC. HEAD CH01-16 J03

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
R	01	0	ANRECH02	0			
R	02	0	ANRECH02	6			
R	03	0	ANRECH05	0			
R	04	0	ANRECH05	6			

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GR: 52 (CONTINUATION)
PREAMPLIFIER UNIT

EL: 03 (CONTINUATION)

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
R	05	0	ANRECH08	0			
R	06	0	ANRECH08	6			
R	07	0	ANRECH11	0			
R	08	0	ANRECH11	6			
R	09	0	ANRECH14	0			
R	10	0	ANRECH14	6			
R	11	0					
R	12	0					
R	13	0					
R	14	0	S-CCCE	0			
R	15	0	+24.CTLS	6			
R	16	0	ANRECH01	0			
R	17	0	ANRECH01	6			
R	18	0	ANRECH04	0			
R	19	0	ANRECH04	6			
R	20	0	ANRECH07	0			
R	21	0	ANRECH07	6			
R	22	0	ANRECH10	0			
R	23	0	ANRECH10	6			
R	24	0	ANRECH13	0			
R	25	0	ANRECH13	6			
R	26	0	ANRECH16	0			
R	27	0	ANRECH16	6			
R	28	0					
R	29	0					
R	30	0					
R	31	0	ANRECH03	0			
R	32	0	ANRECH03	6			
R	33	0	ANRECH06	0			
R	34	0	ANRECH06	6			
R	35	0	ANRECH09	0			
R	36	0	ANRECH09	6			
R	37	0	ANRECH12	0			
R	38	0	ANRECH12	6			
R	39	0	ANRECH15	0			
R	40	0	ANRECH15	6			
R	41	0					
R	42	0					
R	43	0	ANRECH01	0			
R	44	0	ANRECH01	6			

EL: 04 CONN. REC. HEAD CH17-32 J04

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
R	01	0	ANRECH18	0			
R	02	0	ANRECH18	6			
R	03	0	ANRECH21	0			
R	04	0	ANRECH21	6			
R	05	0	ANRECH24	0			
R	06	0	ANRECH24	6			

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GR: 52 (CONTINUATION)
PREAMPLIFIER UNIT

EL: 04 (CONTINUATION)

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
R	07	0	ANRECH27	0			
R	08	0	ANRECL27	6			
R	09	0	ANRECH30	0			
R	10	0	ANRECL30	6			
	11	0					
	12	0					
	13	0					
	14	0					
	15	0					
R	16	0	ANRECH17	0			
R	17	0	ANRECL17	6			
R	18	0	ANRECH20	0			
R	19	0	ANRECL20	6			
R	20	0	ANRECH23	0			
R	21	0	ANRECL23	6			
R	22	0	ANRECH26	0			
R	23	0	ANRECL26	6			
R	24	0	ANRECH29	0			
R	25	0	ANRECL29	6			
R	26	0	ANRECH32	0			
R	27	0	ANRECL32	6			
	28	0					
	29	0					
	30	0					
R	31	0	ANRECH19	0			
R	32	0	ANRECL19	6			
R	33	0	ANRECH22	0			
R	34	0	ANRECL22	6			
R	35	0	ANRECH25	0			
R	36	0	ANRECL25	6			
R	37	0	ANRECH28	0			
R	38	0	ANRECL28	6			
R	39	0	ANRECH31	0			
R	40	0	ANRECL31	6			
	41	0					
	42	0					
	43	0					
	44	0					

EL: 05 CCNN. ERASE HEAD CH01-16 J05

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
R	01	0	YERAHH02	0			
R	02	0	YERAHL02	6			
R	03	0	YERAHH05	0			
R	04	0	YERAHL05	6			
R	05	0	YERAHH08	0			
R	06	0	YERAHL08	6			
R	07	0	YERAHH11	0			
R	08	0	YERAHL11	6			

GR: 52 (CONTINUATION)
PREAMPLIFIER UNIT

EL: 05 (CONTINUATION)

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
R	09	0	YERAHH14	0			
R	10	0	YERAHL14	6			
	11	0					
	12	0					
	13	0					
	14	0					
	15	0					
R	16	0	YERAHH01	C			
R	17	0	YERAHL01	6			
R	18	0	YERAHH04	0			
R	19	0	YERAHL04	6			
R	20	0	YERAHH07	0			
R	21	0	YERAHL07	6			
R	22	0	YERAHH10	0			
R	23	0	YERAHL10	6			
R	24	0	YERAHH13	0			
R	25	0	YERAHL13	6			
R	26	0	YERAHH16	C			
R	27	0	YERAHL16	6			
	28	0					
R	29	0	S-HEAD16	6			
R	30	0	Q.0 -A	0			
R	31	0	YERAHH03	0			
R	32	0	YERAHL03	6			
R	33	0	YERAHH06	0			
R	34	0	YERAHL06	6			
R	35	0	YERAHH09	C			
R	36	0	YERAHL09	6			
R	37	0	YERAHH12	0			
R	38	0	YERAHL12	6			
R	39	0	YERAHH15	0			
R	40	0	YERAHL15	6			
	41	0					
	42	0					
R	43	0	ANERACOH	0			
R	44	0	ANERACCL	6			

EL: 06 CCNN. ERASE HEAD CH17-32 J06

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
R	01	0	YERAHH18	0			
R	02	0	YERAHL18	6			
R	03	0	YERAHH21	0			
R	04	0	YERAHL21	6			
R	05	0	YERAHH24	0			
R	06	0	YERAHL24	6			
R	07	0	YERAHH27	0			
R	08	0	YERAHL27	6			
R	09	0	YERAHH30	0			
R	10	0	YERAHL30	6			

GR: 52 (CONTINUATION)
PREAMPLIFIER UNIT

EL: 06 (CONTINUATION)

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
	11	0					
	12	0					
	13	0					
	14	0					
	15	0					
R	16	0	YERAHH17	0			
R	17	0	YERAHL17	6			
R	18	0	YERAHH20	0			
R	19	0	YERAHL20	6			
R	20	0	YERAHH23	0			
R	21	0	YERAHL23	6			
R	22	0	YERAHH26	0			
R	23	0	YERAHL26	6			
R	24	0	YERAHH29	0			
R	25	0	YERAHL29	6			
R	26	0	YERAHH32	0			
R	27	0	YERAHL32	6			
	28	0					
	29	0					
	30	0					
R	31	0	YERAHH19	0			
R	32	0	YERAHL19	6			
R	33	0	YERAHH22	0			
R	34	0	YERAHL22	6			
R	35	0	YERAHH25	0			
R	36	0	YERAHL25	6			
R	37	0	YERAHH28	0			
R	38	0	YERAHL28	6			
R	39	0	YERAHH31	0			
R	40	0	YERAHL31	6			
	41	0					
	42	0					
	43	0					
	44	0					

EL: 07 CCNN. REP. AMP. CH01-08 J07

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
F	01	0	AN-FAM08	0			
F	02	0	AN-PAM07	0			
F	03	0	AN-PAM06	0			
F	04	0	AN-PAM05	0			
F	05	0	O-PAM-08	6			
F	06	0	O-PAM-07	6			
F	07	0	O-PAM-06	6			
F	08	0	O-PAM-05	6			
	09	0					
	10	0					
	11	0					
F	12	0	+15.C -A	0			

GR: 52 (CONTINUATION)
PREAMPLIFIER UNIT

EL: 07 (CONTINUATION)

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
	13	0					
	14	0					
	15	0					
F	16	0	-15.0 -A	6			
F	17	0	O-PAM-01	6			
F	18	0	O-PAM-02	6			
F	19	0	O-PAM-03	6			
F	20	0	O-PAM-04	6			
F	21	0	AN-PAM01	0			
F	22	0	AN-PAM02	0			
F	23	0	AN-PAM03	0			
F	24	0	AN-PAM04	0			

EL: 08 CCNN. REP. AMP. CH09-16 J08

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
F	01	0	AN-PAM16	0			
F	02	0	AN-PAM15	0			
F	03	0	AN-PAM14	0			
F	04	0	AN-PAM13	0			
F	05	0	O-PAM-16	6			
F	06	0	O-PAM-15	6			
F	07	0	O-PAM-14	6			
F	08	0	O-PAM-13	6			
	09	0					
	10	0					
	11	0					
F	12	0	+15.0 -B	0			
	13	0					
	14	0					
	15	0					
F	16	0	-15.0 -B	6			
F	17	0	O-PAM-09	6			
F	18	0	O-PAM-10	6			
F	19	0	O-PAM-11	6			
F	20	0	O-PAM-12	6			
F	21	0	AN-PAM09	0			
F	22	0	AN-PAM10	0			
F	23	0	AN-PAM11	0			
F	24	0	AN-PAM12	0			

EL: 09 CCNN. REP. AMP. CH17-24 J09

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
F	01	0	AN-PAM24	0			
F	02	0	AN-PAM23	0			
F	03	0	AN-PAM22	0			
F	04	0	AN-PAM21	0			
F	05	0	O-PAM-24	6			

GR: 52 (CONTINUATION)
PREAMPLIFIER UNIT

EL: 09 (CONTINUATION)

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
F	06	0	O-PAM-23	6			
F	07	0	O-PAM-22	6			
F	08	0	O-PAM-21	6			
	09	0					
	10	0					
	11	0					
F	12	0	+15.0 -C	0			
	13	0					
	14	0					
	15	0					
F	16	0	-15.0 -C	6			
F	17	0	O-PAM-17	6			
F	18	0	O-PAM-18	6			
F	19	0	O-PAM-19	6			
F	20	0	O-PAM-20	6			
F	21	0	AN-PAM17	0			
F	22	0	AN-PAM18	0			
F	23	0	AN-PAM19	0			
F	24	0	AN-PAM20	0			

EL: 10 CCNN. REP. AMP. CH25-32 J10

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
F	01	0	AN-PAM32	0			
F	02	0	AN-PAM31	0			
F	03	0	AN-PAM30	0			
F	04	0	AN-PAM29	0			
F	05	C	O-PAM-32	6			
F	06	C	O-PAM-31	6			
F	07	0	O-PAM-30	6			
F	08	0	C-PAM-29	6			
	09	0					
	10	0					
	11	0					
F	12	0	+15.0 -D	0			
	13	0					
	14	0					
	15	0					
F	16	0	-15.0 -D	6			
F	17	0	O-PAM-25	6			
F	18	0	O-PAM-26	6			
F	19	0	O-PAM-27	6			
F	20	0	O-PAM-28	6			
F	21	0	AN-PAM25	0			
F	22	0	AN-PAM26	0			
F	23	0	AN-PAM27	0			
F	24	0	AN-PAM28	0			

GR: 53 1.180.701.00
 BASIS UNIT CH01-02

EL: 01 CONN. AUDIO TO VU-PANEL J01

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
M	01	0	INA-01	0			
M	02	0	INB-01	6			
F	03	0	INB-02	6			
F	04	0	INA-02	0			
M	05	0	GND	9			
	06	0					
	07	0					
F	08	0	GND	9			
M	09	0	GND	9			
	10	0					
	11	0					
F	12	0	GND	9			
M	13	0	OUT1A-01	0			
M	14	0	CUT1B-01	6			
F	15	0	OUT1B-02	6			
F	16	0	OUT1A-02	0			
M	17	0	GND	9			
	18	0					
	19	0					
F	20	0	GND	9			
M	21	0	OUT2A-01	0			
M	22	0	OUT2B-01	6			
F	23	0	OUT2B-02	6			
F	24	0	OUT2A-02	0			

EL: 02 CONN. CONTROL TO VU-PANEL J02

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
F	01	0	S-REA-01	1			
F	02	0	S-IN-01	1			
F	03	0	S-REP-01	1			
F	04	0	B-SYN-01	1			
	05	0					
	06	0					
	07	0					
	08	0					
F	09	0	B-RCD-01	1			
F	10	0	B-REA-01	1			
F	11	0	O.O-DIGA	0			
	12	0					
M	13	0	S-REA-02	2			
M	14	0	S-IN-02	9			
M	15	0	S-REP-02	4			
M	16	0	B-SYN-02	9			
	17	0					
	18	0					
	19	0					
	20	0					
M	21	0	B-RCD-02	2			
M	22	0	B-REA-02	0			

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GR: 53 (CONTINUATION)
 BASIS UNIT CH01-02

EL: 02 (CONTINUATION)

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
	23	0					
	24	0					
EL: 03 CONN. HEAD SIGNALS J03							
TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
M	01	0	AN-PAM01	0			
M	02	0	O-PAM-01	6			
F	03	0	C-PAM-02	6			
F	04	0	AN-PAM02	0			
M	05	0	GND	9			
M	06	0	GND	9			
F	07	0	GND	9			
F	08	0	GND	9			
M	09	0	ANRECH01	0			
M	10	0	ANRECL01	6			
F	11	0	ANRECL02	6			
F	12	0	ANRECH02	0			
M	13	0	GND	9			
M	14	0	+15.0 -A				
M	15	0	-15.0 -A				
	16	0					
M	17	0	GND	9			
	18	0					
	19	0					
F	20	0	GND	9			
M	21	0	YERAH01	0			
M	22	0	YERAH01	6			
F	23	0	YERAH02	6			
F	24	0	YERAH02	0			

EL: 04 CONN. CH. FEED J04

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
F	01	0	O.O-DIGA	0			
F	02	0	+ 5.0 -A	3			
F	03	0	S-REP01	8			
F	04	0	S-SYN01	8			
F	05	0	S-IN01	1			
F	06	0	S-SYN02	9			
F	07	0	S-REP02	8			
F	08	0	S-CALIB	5			
F	09	0	S-GAIN	4			
F	10	0	S-NAB	7			
F	11	0	S-CCIR	1			
F	12	0	Y-REC	6			
M	13	0	Y-MUTE	7			
M	14	0	C.O -A	4			
M	15	0	Y-LOW	5			

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GR: 53 (CONTINUATION)
 BASIS UNIT CH01-C2

EL: 04 (CONTINUATION)

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
M	16	0	YPS-REC	3			
	17	0					
F	18	0	S-IN02	9			
F	19	0	-15.0 -A	6			
F	20	0	+15.0 -A	2			
F	21	0	O-ERAS	5			
F	22	0	O-BIAS	3			
F	23	0	YAC-ERAS	6			
F	24	0	YAC-BIAS	4			

EL: 05 CONN. DELAY UNIT J05

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
F	01	0	Y-RECE01	9			
F	02	0	Y-REC01	9			
F	03	0	Y-REC101	9			
F	04	0	Y-REC001	9			
	05	0					
	06	0					
	07	0					
	08	0					
M	09	0	Y-RECE02	3			
M	10	0	Y-REC002	3			
M	11	0	Y-REC102	3			
M	12	0	Y-REC002	3			

GR: 54 1.180.701.00
 BASIS UNIT CH03-04

EL: 01 CONN. AUDIO TO VU-PANEL J01

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
M	01	0	INA-03	0			
M	02	0	INB-03	6			
F	03	0	INB-04	6			
F	04	0	INA-04	0			
M	05	0	GND	9			
	06	0					
	07	0					
F	08	0	GND	9			
M	09	0	GND	9			
	10	0					
	11	0					
F	12	0	GND	9			
M	13	0	CUT1A-03	0			
M	14	0	OUT1B-03	6			
F	15	0	OUT1B-04	6			
F	16	0	CUT1A-04	0			
M	17	0	GND	9			
	18	0					
	19	0					
F	20	0	GND	9			
M	21	0	OUT2A-03	0			
M	22	0	CUT2B-03	6			
F	23	0	CUT2B-04	6			
F	24	0	OUT2A-04	0			

EL: 02 CONN. CONTROL TO VU-PANEL J02

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
F	01	0	S-REA-03	3			
F	02	0	S-IN-03	3			
F	03	0	S-REP-03	3			
F	04	0	B-SYN-03	3			
	05	0					
	06	0					
	07	0					
	08	0					
F	09	0	B-RCD-03	3			
F	10	0	B-REA-03	3			
F	11	0	O.O-DIGA				
	12	0					
M	13	0	S-REA-04	2			
M	14	0	S-IN-04	9			
M	15	0	S-REP-04	4			
M	16	0	B-SYN-04	9			
	17	0					
	18	0					
	19	0					
	20	0					
M	21	0	B-RCD-04	2			
M	22	0	B-REA-04	0			

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GR: 54 (CONTINUATION)
 BASIS UNIT CH03-04

EL: 02 (CONTINUATION)

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
	23	0					
	24	0					
EL: 03 CONN. HEAD SIGNALS J03							
TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
M	01	0	AN-PAM03	0			
M	02	0	C-PAM-03	6			
F	03	0	O-PAM-04	6			
F	04	0	AN-PAM04	0			
M	05	0	GND	9			
M	06	0	GND	9			
F	07	0	GND	9			
F	08	0	GND	9			
M	09	0	ANRECH03	0			
M	10	0	ANRECL03	6			
F	11	0	ANRECL04	6			
F	12	0	ANRECH04	0			
M	13	0	GND	9			
M	14	0	+15.0 -A				
M	15	0	-15.0 -A				
	16	0					
M	17	0	GND	9			
	18	0					
	19	0					
F	20	0	GND	9			
M	21	0	YERAH03	0			
M	22	0	YERAH03	6			
F	23	0	YERAH04	6			
F	24	0	YERAH04	0			

EL: 04 CONN. CH. FEED J04

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
F	01	0	C.O-DIGA	0			
F	02	0	+ 5.0 -A	3			
F	03	0	S-REP01	8			
F	04	0	S-SYN01	8			
F	05	0	S-IN01	1			
F	06	0	S-SYN02	9			
F	07	0	S-REP02	8			
F	08	0	S-CALIB	5			
F	09	0	S-GAIN	4			
F	10	0	S-NAB	7			
F	11	0	S-CCIR	1			
F	12	0	Y-REC	6			
M	13	0	Y-MUTE	7			
M	14	0	O.O -A	4			
M	15	0	Y-LCW	5			

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GR: 54 (CONTINUATION)
 BASIS UNIT CH03-04

EL: 04 (CONTINUATION)

GR: 55 1.180-701.00
BASIS UNIT CH05-06

EL: 01 CONN. AUDIO TO VU-PANEL J01

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
M	01	0	INA-05	0			
M	02	0	INB-05	6			
F	03	0	INB-06	6			
F	04	0	INA-06	0			
M	05	0	GND	9			
	06	0					
	07	0					
F	08	0	GND	9			
M	09	0	GNC	9			
	10	0					
	11	0					
F	12	0	GNC	9			
M	13	0	OUT1A-05	0			
M	14	0	OUT1B-05	6			
F	15	0	OUT1B-06	6			
F	16	0	OUT1A-06	0			
M	17	0	GND	9			
	18	0					
	19	0					
F	20	0	GND	9			
M	21	0	OUT2A-05	0			
M	22	0	OUT2B-05	6			
F	23	0	OUT2B-06	6			
F	24	0	OUT2A-06	0			

EL: 02 CONN. CONTROL TO VU-PANEL J02

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
F	01	0	S-REA-05	5			
F	02	0	S-IN -05	5			
F	03	0	S-REP-05	5			
F	04	0	B-SYN-05	5			
	05	0					
	06	0					
	07	0					
	08	0					
F	09	0	B-RCD-05	5			
F	10	0	B-REA-05	5			
F	11	0	O.O-DIGA				
	12	0					
M	13	0	S-REA-06	2			
M	14	0	S-IN -06	9			
M	15	0	S-REP-06	4			
M	16	0	B-SYN-06	9			
	17	0					
	18	0					
	19	0					
	20	0					
M	21	0	B-RCD-06	2			
M	22	0	B-REA-06	0			

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GR: 55 (CONTINUATION)
BASIS UNIT CH05-06

EL: 02 (CONTINUATION)

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
	23	0					
	24	0					

EL: 03 CONN. HEAD SIGNALS J03

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
M	01	0	AK-PAM05	0			
M	02	0	O-PAM-05	6			
F	03	0	O-PAM-06	6			
F	04	0	AK-PAM06	0			
M	05	0	GND	9			
M	06	0	GND	9			
F	07	0	GND	9			
F	08	0	GND	9			
M	09	0	ANRECH05	0			
M	10	0	ANRECL05	6			
F	11	0	ANRECL06	6			
F	12	0	ANRECH06	0			
M	13	0	GND	9			
M	14	0	+15.0 -A				
M	15	0	-15.0 -A				
	16	0					
M	17	0	GND	9			
	18	0					
	19	0					
F	20	0	GND	9			
M	21	0	YERAH05	0			
M	22	0	YERAH05	6			
F	23	0	YERAH06	6			
F	24	0	YERAH06	0			

EL: 04 CONN. CH. FEED J04

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
F	01	0	C.O-DIGA	0			
F	02	0	+ 5.0 -A	3			
F	03	0	S-REPM1	8			
F	04	0	S-SYNM1	8			
F	05	0	S-INM1	1			
F	06	0	S-SYNM2	9			
F	07	0	S-REPM2	8			
F	08	0	S-CALIB	5			
F	09	0	S-GAIN	4			
F	10	0	S-NAB	7			
F	11	0	S-CCIR	1			
F	12	0	Y-REC	6			
M	13	0	Y-MUTE	7			
M	14	0	O.O -A	4			
M	15	0	Y-LCW	5			

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GR: 55 (CONTINUATION)
BASIS UNIT CH05-06

EL: 04 (CONTINUATION)

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
M	16	0	YPS-REC	3			
	17	0					
F	18	0	S-INW2	9			
F	19	0	-15.C -A	6			
F	20	0	+15.C -A	2			
F	21	0	O-ERAS	5			
F	22	0	O-BIAS	3			
F	23	0	YAC-ERAS	6			
F	24	0	YAC-EIAS	4			

EL: 05 CONN. DELAY UNIT J05

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
F	01	0	Y-RECE05	9			
F	02	0	Y-RECB05	9			
F	03	0	Y-RECI05	9			
F	04	0	Y-RECC05	9			
	05	0					
	06	0					
	07	0					
	08	0					
M	09	0	Y-RECE06	3			
M	10	0	Y-RECB06	3			
M	11	0	Y-RECI06	3			
M	12	0	Y-RECC06	3			

GR: 56 1.180-701.00
BASIS UNIT CH07-08

EL: 01 CONN. AUDIO TO VU-PANEL J01

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
M	01	0	INA-07	0			
M	02	0	INB-07	6			
F	03	0	INB-08	6			
F	04	0	INA-08	0			
M	05	0	GND	9			
	06	0					
	07	0					
F	08	0	GND	9			
M	09	0	GNC	9			
	10	0					
	11	0					
F	12	0	GND	9			
M	13	0	OUT1A-07	0			
M	14	0	OUT1B-07	6			
F	15	0	OUT1B-08	6			
F	16	0	OUT1A-08	0			
M	17	0	GND	9			
	18	0					
	19	0					
F	20	0	GND	9			
M	21	0	OUT2A-07	0			
M	22	0	OUT2B-07	6			
F	23	0	OUT2B-08	6			
F	24	0	OUT2A-08	0			

EL: 02 CONN. CONTROL TO VU-PANEL J02

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
F	01	0	S-REA-07	6			
F	02	0	S-IN -07	6			
F	03	0	S-REP-07	6			
F	04	0	B-SYN-07	6			
	05	0					
	06	0					
	07	0					
	08	0					
F	09	0	B-RCD-07	6			
F	10	0	B-REA-07	6			
F	11	0	O.O-DIGA				
	12	0					
M	13	0	S-REA-08	2			
M	14	0	S-IN -08	9			
M	15	0	S-REP-08	4			
M	16	0	B-SYN-08	9			
	17	0					
	18	0					
	19	0					
	20	0					
M	21	0	B-RCD-08	2			
M	22	0	B-REA-08	0			

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GR: 56 (CONTINUATION)
BASIS UNIT CH07-08

EL: 02 (CONTINUATION)

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
	23	0					
	24	0					

EL: 03 CONN. HEAD SIGNALS J03

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
M	01	0	AK-PAM07	0			
M	02	0	O-PAM-07	6			
F	03	0	O-PAM-08	6			
F	04	0	AK-PAM08	0			
M	05	0	GND	9			
M	06	0	GND	9			
F	07	0	GND	9			
F	08	0	GND	9			
M	09	0	ANRECH07	0			
M	10	0	ANRECL07	6			
F	11	0	ANRECL08	6			
F	12	0	ANRECH08	0			
M	13	0	GND	9			
M	14	0	+15.0 -A	0			
M	15	0	-15.0 -A	6			
M	16	0	GND	9			
M	17	0	GND	9			
M	18	0	S-HEAD16	6			
F	19	0	O.O -A	0			
F	20	0	GND	9			
M	21	0	YERAH07	0			
M	22	0	YERAH07	6			
F	23	0	YERAH08	6			
F	24	0	YERAH08	0			

EL: 04 CONN. CH. FEED J04

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
F	01	0	O.O-DIGA	0			
F	02	0	+ 5.0 -A	3			
F	03	0	S-REPM1	8			
F	04	0	S-SYNM1	8			
F	05	0	S-INM1	1			
F	06	0	S-SYNM2	9			
F	07	0	S-REPM2	8			
F	08	0	S-CALIB	5			
F	09	0	S-GAIN	4			
F	10	0	S-NAB	7			
F	11	0	S-CCIR	1			
F	12	0	Y-REC	6			
M	13	0	Y-MUTE	7			
M	14	0	O.O -A	4			
M	15	0	Y-LCW	5			

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GR: 56 (CONTINUATION)
BASIS UNIT CH07-08

EL: 04 (CONTINUATION)

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
M	16	0	YPS-REC	3			
	17	0					
F	18	0	S-INW2	9			
F	19	0	-15.C -A	6			
F	20	0	+15.C -A	2			
F	21	0	O-ERAS	5			
F	22	0	O-BIAS	3			
F	23	0	YAC-ERAS	6			
F	24	0	YAC-EIAS	4			

EL: 05 CONN. DELAY UNIT J05

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
F	01	0	Y-RECE07	9			
F	02	0	Y-RECB07	9			
F	03	0	Y-RECI07	9			
F	04	0	Y-RECC07	9			

GR: 57 (CONTINUATION)
BASIS UNIT CHQ9-1C

EL : 04 (CONTINUATION)								
TYPE	PT	LV	SIG.	NAME	COLOR	F	X	Y
M	16	0	YPS	-REC	3			
	17	0						
F	18	0	S-INM2		9			
F	19	0	-15.0	-B	6			
F	20	0	+15.0	-B	2			
F	21	0	0-ERAS		5			
F	22	0	0-BIAS		3			
F	23	0	YAC-ERAS		6			
F	24	0	YAC-BIAS		4			
EL : 05 CONN. DELAY UNIT J05								
TYPE	PT	LV	SIG.	NAME	COLOR	F	X	Y
F	C1	0	Y-RECE0	9	9			
F	02	0	Y-RECB0	9	9			
F	03	0	Y-RECIO	9	9			
F	04	0	Y-RECD0	9	9			
	05	0						
	06	0						
	07	0						
	08	0						
M	09	0	Y-RECE1	3	3			
M	10	0	Y-RECB1	3	3			

GR: 58 (CONTINUATION)
BASIS UNIT CH11-12

EL: 04 (CONTINUATION)								
TYPE	PT	LV	SIG.	NAME	COLOR	F	X	Y
M	16	0	YPS-	REC	3			
	17	0						
F	18	0	S-IN#2		9			
F	19	0	-15.0	-B	6			
F	20	0	+15.0	-B	2			
F	21	0	0-ERAS		5			
F	22	0	0-BIAS		3			
F	23	0	YAC-ERAS		6			
F	24	0	YAC-BIAS		4			

EL: 05 CONN. DELAY UNIT								J05
TYPE	PT	LV	SIG.	NAME	COLOR	F	X	Y
F	01	0	Y-RECE11		9			
F	02	0	Y-RECB11		9			
F	03	0	Y-REC111		9			
F	04	0	Y-RECE11		9			
	05	0						
	06	0						
	07	0						
	08	0						
M	09	0	Y-RECE12		3			
M	10	0	Y-RECB12		3			

GR: 59 1.180.701.00
BASIS UNIT CH13-14

EL: 01 CONN. AUDIO TO VU-PANEL J01

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
M	01	0	INA-13	0			
M	02	0	INB-13	6			
F	03	0	INB-14	6			
F	04	0	INA-14	0			
M	05	0	GND	9			
	06	0					
	07	0					
F	08	0	GND	9			
M	09	0	GNC	9			
	10	0					
F	12	0	GND	9			
M	13	0	OUT1A-13	0			
M	14	0	OUT1B-13	6			
F	15	0	OUT1B-14	6			
F	16	0	OUT1A-14	0			
M	17	0	GND	9			
	18	0					
	19	0					
F	20	0	GND	9			
M	21	0	OUT2A-13	0			
M	22	0	OUT2B-13	6			
F	23	0	OUT2B-14	6			
F	24	0	OUT2A-14	0			

EL: 02 CONN. CONTROL TO VU-PANEL J02

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
F	01	0	S-REA-13	5			
F	02	0	S-IN -13	5			
F	03	0	S-REP-13	5			
F	04	0	B-SYN-13	5			
	05	0					
	06	0					
	07	0					
	08	0					
F	09	0	B-RCD-13	5			
F	10	0	B-REA-13	5			
F	11	0	O.O-DIGB				
	12	0					
M	13	0	S-REA-14	2			
M	14	0	S-IN -14	9			
M	15	0	S-REP-14	4			
M	16	0	B-SYN-14	9			
	17	0					
	18	0					
	19	0					
	20	0					
M	21	0	B-RCD-14	2			
M	22	0	B-REA-14	0			

GR: 59 (CONTINUATION)
BASIS UNIT CH13-14

EL: 02 (CONTINUATION)

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
	23	0					
	24	0					
EL: 03 CONN. HEAD SIGNALS J03							
TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
M	01	0	AK-PAM13	0			
M	02	0	O-PAM-13	6			
F	03	0	O-PAM-14	6			
F	04	0	AK-PAM14	0			
M	05	0	GND	9			
M	06	0	GND	9			
F	07	0	GND	9			
F	08	0	GND	9			
M	09	0	ANRECH13	0			
M	10	0	ANRECH13	6			
F	11	0	ANRECH14	6			
F	12	0	ANRECH14	0			
M	13	0	GND	9			
M	14	0	+15.0 -B				
M	15	0	-15.0 -B				
	16	0					
M	17	0	GND	9			
	18	0					
	19	0					
F	20	0	GND	5			
M	21	0	YERAHH13	0			
M	22	0	YERAH13	6			
F	23	0	YERAH14	6			
F	24	0	YERAH14	0			

EL: 04 CONN. CH. FEED J04

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
F	01	0	O.O-DIGB	0			
F	02	0	+ 5.0 -B	3			
F	03	0	S-REPM1	8			
F	04	0	S-SYNM1	8			
F	05	0	S-INM1	1			
F	06	0	S-SYNM2	9			
F	07	0	S-REPM2	8			
F	08	0	S-CALIB	5			
F	09	0	S-GAIN	4			
F	10	0	S-NAB	7			
F	11	0	S-CCIR	1			
F	12	0	Y-REC	6			
M	13	0	Y-MUTE	7			
M	14	0	O.O -B	4			
M	15	0	Y-LCW	5			

GR: 59 (CONTINUATION)
BASIS UNIT CH13-14

EL: 04 (CONTINUATION)

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
M	16	0	YPS-REC	3			
	17	0					
F	18	0	S-INM2	9			
F	19	0	-15.0 -B	6			
F	20	0	+15.0 -B	2			
F	21	0	O-ERAS	5			
F	22	0	O-BIAS	3			
F	23	0	YAC-ERAS	6			
F	24	0	YAC-BIAS	4			

EL: 05 CONN. DELAY UNIT J05

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
F	01	0	Y-RECE13	9			
F	02	0	Y-RECE13	9			
F	03	0	Y-RECE13	9			
F	04	0	Y-RECE13	9			
	05	0					
	06	0					
	07	0					
	08	0					
M	09	0	Y-RECE14	3			
M	10	0	Y-RECE14	3			
M	11	0	Y-RECE14	3			
M	12	0	Y-RECE14	3			

GR: 60 1.180.701.00
BASIS UNIT CH15-16

EL: 01 CONN. AUDIO TO VU-PANEL J01

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
M	01	0	INA-15	0			
M	02	0	INB-15	6			
F	03	0	INB-16	6			
F	04	0	INA-16	0			
M	05	0	GND	9			
	06	0					
	07	0					
F	08	0	GND	9			
M	09	0	GND	9			
	10	0					
F	12	0	GND	9			
M	13	0	OUT1A-15	0			
M	14	0	OUT1B-15	6			
F	15	0	OUT1B-16	6			
F	16	0	OUT1A-16	0			
M	17	0	GND	9			
	18	0					
	19	0					
F	20	0	GND	9			
M	21	0	OUT2A-15	0			
M	22	0	OUT2B-15	6			
F	23	0	OUT2B-16	6			
F	24	0	OUT2A-16	0			

EL: 02 CONN. CONTROL TO VU-PANEL J02

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
F	01	0	S-REA-15	6			
F	02	0	S-IN -15	6			
F	03	0	S-REP-15	6			
F	04	0	B-SYN-15	6			
	05	0					
	06	0					
	07	0					
	08	0					
F	09	0	B-RCD-15	6			
F	10	0	B-REA-15	6			
F	11	0	O.O-DIGB				
	12	0					
M	13	0	S-REA-16	2			
M	14	0	S-IN -16	9			
M	15	0	S-REP-16	4			
M	16	0	B-SYN-16	9			
	17	0					
	18	0					
	19	0					
	20	0					
M	21	0	B-RCD-16	2			
M	22	0	B-REA-16	0			

GR: 60 (CONTINUATION)
BASIS UNIT CH15-16

EL: 02 (CONTINUATION)

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
	23	0					
	24	0					
EL: 03 CONN. HEAD SIGNALS J03							
TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
M	01	0	AK-PAM15	0			
M	02	0	O-PAM-15	6			
F	03	0	O-PAM-16	6			
F	04	0	AK-PAM16	0			
M	05	0	GND	9			
M	06	0	GND	9			
F	07	0	GND	9			
F	08	0	GND	9			
M	09	0	ANRECH15	0			
M	10	0	ANRECH15	6			
F	11	0	ANRECH16	6			
F	12	0	ANRECH16	0			
M	13	0	GND	9			
M	14	0	+15.0 -B	0			
M	15	0	-15.0 -B	6			
	16	0					
M	17	0	GND	9			
M	18	0	S-HEAD16	6			
F	19	0	C.O -B	0			
F	20	0	GND	9			
M	21	0	YERAHH15	0			
M	22	0	YERAH15	6			
F	23	0	YERAH16	6			
F	24	0	YERAHH16	0			

EL: 04 CONN. CH. FEED J04

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
F	01	0	O.O-DIGB	0			
F	02	0	+ 5.0 -B	3			
F	03	0	S-REPM1	8			
F	04	0	S-SYNM1	8			
F	05	0	S-INM1	1			
F	06	0	S-SYNM2	9			
F	07	0	S-REPM2	8			
F	08	0	S-CALIB	5			
F	09	0	S-GAIN	4			
F	10	0	S-NAB	7			
F	11	0	S-CCIR	1			
F	12	0	Y-REC	6			
M	13	0	Y-MUTE	7			
M	14	0	O.O -B	4			
M	15	0	Y-LCW	5			

GR: 60 (CONTINUATION)
BASIS UNIT CH15-16

EL: 04 (CONTINUATION)

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
M	16	0	YPS-REC	3			
	17	0					
F	18	0	S-INM2	9			
F	19	0	-15.0 -B	6			
F	20	0	+15.0 -B	2			
F	21	0	O-ERAS	5			
F	22	0	O-BIAS	3			
F	23	0	YAC-ERAS	6			
F	24	0	YAC-BIAS	4			

EL: 05 CONN. DELAY UNIT J05

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
F	01	0	Y-RECE15	9			
F	02	0	Y-RECB15	9			
F	03	0	Y-RECI15	9			
F	04	0	Y-RECC15	9			
	05	0					
	06	0					
	07	0					
	08	C					
	09	0	Y-RECE16	3			
M	10	0	Y-RECB16	3			
M	11	0	Y-RECI16	3			
M	12	0	Y-RECC16	3			

GR: 61 1.180.701.00
BASIS UNIT CH17-18

EL: 01 CONN. AUDIO TO VU-PANEL J01

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
M	01	0	INA-17	0			
M	02	0	INB-17	6			
F	03	0	INB-18	6			
F	04	0	INA-18	0			
M	05	0	GND	9			
	06	0					
	07	0					
F	08	0	GND	9			
M	09	0	GND	9			
	10	0					
	11	0					
F	12	0	GND	9			
M	13	0	OUT1A-17	0			
M	14	0	OUT1B-17	6			
F	15	0	OUT1B-18	6			
F	16	0	OUT1A-18	0			
M	17	0	GND	9			
	18	0					
	19	0					
F	20	0	GND	9			
M	21	0	OUT2A-17	0			
M	22	0	OUT2B-17	6			
F	23	0	OUT2B-18	6			
F	24	0	OUT2A-18	0			

EL: 02 CONN. CCTRL TO VU-PANEL J02

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
F	01	0	S-REA-17	1			
F	02	0	S-IN -17	1			
F	03	0	S-REP-17	1			
F	04	0	B-SYN-17	1			
	05	0					
	06	0					
	07	0					
	08	0					
F	09	0	B-RCD-17	1			
F	10	0	B-REA-17	1			
F	11	0	O.O-DIGC				
	12	0					
M	13	0	S-REA-18	2			
M	14	0	S-IN -18	9			
M	15	0	S-REP-18	4			
M	16	0	B-SYN-18	9			
	17	0					
	18	0					
	19	0					
	20	0					
M	21	0	B-RCD-18	2			
M	22	0	B-REA-18	0			

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GR: 61 (CONTINUATION)
BASIS UNIT CH17-18

EL: 02 (CONTINUATION)

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
	23	0					
	24	0					

EL: 03 CONN. HEAD SIGNALS J03

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
M	01	0	AN-PAM17	0			
M	02	0	O-PAM-17	6			
F	03	0	O-PAM-18	6			
F	04	0	AN-PAM18	0			
M	05	0	GND	9			
M	06	0	GND	9			
F	07	0	GND	9			
F	08	0	GND	9			
M	09	0	ANRECH17	0			
M	10	0	ANRECL17	6			
F	11	0	ANRECL18	6			
F	12	0	ANRECH18	0			
M	13	0	GND	9			
M	14	0	+15.0 -C				
M	15	0	-15.0 -C				
	16	0					
M	17	0	GND	9			
	18	0					
	19	0					
F	20	0	GND	9			
M	21	0	YERAHF17	0			
M	22	0	YERAH17	6			
F	23	0	YERAH18	6			
F	24	0	YERAHF18	0			

EL: 04 CONN. CH. FEED J04

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
F	01	0	O.O-DIGC	0			
F	02	0	+ 5.0 -C	3			
F	03	0	S-REPM1	8			
F	04	0	S-SYNM1	8			
F	05	0	S-INM1	1			
F	06	0	S-SYNM2	9			
F	07	0	S-REPM2	8			
F	08	0	S-CALIB	5			
F	09	0	S-GAIN	4			
F	10	0	S-NAB	7			
F	11	0	S-CCIR	1			
F	12	0	Y-REC	6			
M	13	0	Y-MUTE	7			
M	14	0	C.O	-C 4			
M	15	0	Y-LOW	5			

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GR: 61 (CONTINUATION)
BASIS UNIT CH17-18

EL: 04 (CONTINUATION)

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
M	16	0	YPS-REC	3			
	17	0					
F	18	0	S-INM2	9			
F	19	0	-15.0 -C	6			
F	20	0	+15.0 -C	2			
F	21	0	O-ERAS	5			
F	22	0	O-BIAS	3			
F	23	0	YAC-ERAS	6			
F	24	0	YAC-BIAS	4			

EL: 05 CONN. DELAY UNIT J05

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
F	01	0	Y-RECE17	9			
F	02	0	Y-RECE17	9			
F	03	0	Y-RECE17	9			
F	04	0	Y-RECE17	9			
	05	0					
	06	0					
	07	0					
	08	0					
M	09	0	Y-RECE18	3			
M	10	0	Y-RECE18	3			
M	11	0	Y-RECE18	3			
M	12	0	Y-RECE18	3			

GR: 62 1.180.701.00
BASIS UNIT CH19-20

EL: 01 CONN. AUDIO TO VU-PANEL J01

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
M	01	0	INA-19	0			
M	02	0	INB-19	6			
F	03	0	INB-20	6			
F	04	0	INA-20	0			
M	05	0	GND	9			
	06	0					
	07	0					
F	08	0	GND	9			
M	09	0	GND	9			
	10	0					
	11	0					
F	12	0	GND	9			
M	13	0	OUT1A-19	0			
M	14	0	OUT1B-19	6			
F	15	0	OUT1B-20	6			
F	16	0	OUT1A-20	0			
M	17	0	GND	9			
	18	0					
	19	0					
F	20	0	GND	9			
M	21	0	OUT2A-19	0			
M	22	0	OUT2B-19	6			
F	23	0	OUT2B-20	6			
F	24	0	OUT2A-20	0			

EL: 02 CONN. CCTRL TO VU-PANEL J02

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
F	01	0	S-REA-19	3			
F	02	0	S-IN -19	3			
F	03	0	S-REP-19	3			
F	04	0	B-SYN-19	3			
	05	0					
	06	0					
	07	0					
	08	0					
F	09	0	B-RCD-19	3			
F	10	0	B-REA-19	3			
F	11	0	O.O-DIGC				
	12	0					
M	13	0	S-REA-20	2			
M	14	0	S-IN -20	9			
M	15	0	S-REP-20	4			
M	16	0	B-SYN-20	2			
	17	0					
	18	0					
	19	0					
	20	0					
M	21	0	B-RCD-20	2			
M	22	0	B-REA-20	0			

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GR: 62 (CONTINUATION)
BASIS UNIT CH19-20

EL: 02 (CONTINUATION)

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
	23	0					
	24	0					

EL: 03 CONN. HEAD SIGNALS J03

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
M	01	0	AN-PAM19	0			
M	02	0	C-PAM-19	6			
F	03	0	O-PAM-20	6			
F	04	0	AN-PAM20	0			
M	05	0	GND	9			
M	06	0	GND	9			
F	07	0	GND	9			
F	08	0	GND	9			
M	09	0	ANRECH19	0			
M	10	0	ANRECL19	6			
F	11	0	ANRECL20	6			
F	12	0	ANRECH20	0			
M	13	0	GND	9			
M	14	0	+15.0 -C				
M	15	0	-15.0 -C				
	16	0					
M	17	0	GND	9			
	18	0					
	19	0					
F	20	0	GND	9			
M	21	0	YERAHH19	0			
M	22	0	YERAH19	6			
F	23	0	YERAH20	6			
F	24	0	YERAHH20	0			

EL: 04 CONN. CH. FEED J04

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
F	01	0	C.O-DIGC	0			
F	02	0	+ 5.0 -C	3			
F	03	0	S-REPM1	8			
F	04	0	S-SYNM1	8			
F	05	0	S-INM1	1			
F	06	0	S-SYNM2	9			
F	07	0	S-REPM2	8			
F	08	0	S-CALIB	5			
F	09	0	S-GAIN	4			
F	10	0	S-NAB	7			
F	11	0	S-CCIR	1			
F	12	0	Y-REC	6			
M	13	0	Y-MUTE	7			
M	14	0	C.O	-C 4			
M	15	0	Y-LCW	5			

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GR: 62 (CONTINUATION)
BASIS UNIT CH19-20

EL: 04 (CONTINUATION)

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
M	16	0	YPS-REC	3			
	17	0					
F	18	0	S-INM2	9			
F	19	0	-15.0 -C	6			
F	20	0	+15.0 -C	2			
F	21	0	O-ERAS	5			
F	22	0	O-BIAS	3			
F	23	0	YAC-ERAS	6			
F	24	0	YAC-BIAS	4			

EL: 05 CONN. DELAY UNIT J05

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
F	01	0	Y-RECE19	9			
F	02	0	Y-RECE19	9			
F	03	0	Y-RECI19	9			
F	04	C	Y-RECC19	9			
	05	0					
	06	0					
	07	C					
	08	0					
M	C9	0	Y-RECE20	3			
M	10	0	Y-RECB20	3			
M	11	0	Y-RECI20	3			
M	12	0	Y-RECD20	3			

GR: 63 1.18C.701.00
BASIS UNIT CH21-22

EL: 01 CONN. AUDIO TO VU-PANEL J01

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
M	01	0	INA-21	0			
M	02	0	INB-21	6			
F	03	0	INB-22	6			
F	04	0	INA-22	0			
M	05	0	GND	9			
	06	0					
	07	0					
F	08	0	GND	9			
M	09	0	GND	9			
	10	0					
	11	0					
F	12	0	GND	9			
M	13	0	CUT1A-21	0			
M	14	0	CUT1B-21	6			
F	15	0	CUT1B-22	6			
F	16	0	CUT1A-22	0			
M	17	0	GND	9			
	18	0					
	19	0					
F	20	0	GND	9			
M	21	0	CUT2A-21	0			
M	22	0	CUT2B-21	6			
F	23	0	CUT2B-22	6			
F	24	0	CUT2A-22	0			

EL: 02 CONN. CONTROL TO VU-PANEL J02

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
F	01	0	S-REA-21	5			
F	02	0	S-IN -21	5			
F	03	0	S-REP-21	5			
F	04	0	B-SYN-21	5			
	05	0					
	06	0					
	07	0					
	08	0					
F	09	0	B-RCD-21	5			
F	10	0	B-REA-21	5			
F	11	0	0.0-DIGC				
	12	0					
M	13	0	S-REA-22	2			
M	14	0	S-IN -22	9			
M	15	0	S-REP-22	4			
M	16	0	B-SYN-22	9			
	17	0					
	18	0					
	19	0					
	20	0					
M	21	0	B-RCD-22	2			
M	22	0	B-REA-22	0			

GR: 63 (CONTINUATION)
BASIS UNIT CH21-22

EL: 02 (CONTINUATION)

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
	23	0					
	24	0					

EL: 03 CONN. HEAD SIGNALS J03

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
M	01	0	AN-PAM21	0			
M	02	0	0-PAM-21	6			
F	03	0	0-PAM-22	6			
F	04	0	AN-PAM22	0			
M	05	0	GND	9			
M	06	0	GND	9			
F	07	0	GND	9			
F	08	0	GND	9			
M	09	0	ANRECH21	0			
M	10	0	ANRECL21	6			
F	11	0	ANRECH22	6			
F	12	0	ANRECH22	0			
M	13	0	GND	9			
M	14	0	+15.0 -C				
M	15	0	-15.0 -C				
	16	0					
M	17	0	GND	9			
	18	0					
	19	0					
F	20	0	GND	9			
M	21	0	YERAAH21	0			
M	22	0	YERAAH21	6			
F	23	0	YERAAH22	6			
F	24	0	YERAAH22	0			

EL: 04 CONN. CH. FEED J04

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
F	01	0	0.0-DIGC	0			
F	02	0	+5.0 -C	3			
F	03	0	S-REP1	8			
F	04	0	S-SYN1	8			
F	05	0	S-INM1	1			
F	06	0	S-SYN2	9			
F	07	0	S-REP2	8			
F	08	0	S-CALIB	5			
F	09	0	S-GAIN	4			
F	10	0	S-NAB	7			
F	11	0	S-CCIR	1			
F	12	0	Y-REC	6			
M	13	0	Y-MUTE	7			
M	14	0	0.0 -C	4			
M	15	0	Y-LCW	5			

GR: 63 (CONTINUATION)
BASIS UNIT CH21-22

EL: 04 (CONTINUATION)

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
M	16	0	YPS-REC	3			
	17	0					
F	18	0	S-INW2	9			
F	19	0	-15.0 -C	6			
F	20	0	+15.0 -C	2			
F	21	0	0-ERAS	5			
F	22	0	0-BIAS	3			
F	23	0	YAC-ERAS	6			
F	24	0	YAC-EIAS	4			

EL: 05 CONN. DELAY UNIT J05

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
F	01	0	Y-RECE21	9			
F	02	0	Y-RECB21	9			
F	03	0	Y-RECI21	9			
F	04	0	Y-RECC21	9			
	05	0					
	06	0					
	07	0					
	08	0					
M	09	0	Y-RECE22	3			
M	10	0	Y-RECB22	3			
M	11	0	Y-RECI22	3			
M	12	0	Y-RECC22	3			

GR: 64 1.180.701.00
BASIS UNIT CH23-24

EL: 01 CONN. AUDIO TO VU-PANEL J01

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
M	01	0	INA-23	0			
M	02	0	INB-23	6			
F	03	0	INB-24	6			
F	04	0	INA-24	0			
M	05	0	GND	9			
	06	0					
	07	0					
F	08	0	GND	9			
M	09	0	GND	9			
	10	0					
	11	0					
F	12	0	GND	9			
M	13	0	CUT1A-23	0			
M	14	0	CUT1B-23	6			
F	15	0	CUT1B-24	6			
F	16	0	CUT1A-24	0			
M	17	0	GND	9			
	18	0					
	19	0					
F	20	0	GND	9			
M	21	0	CUT2A-23	0			
M	22	0	CUT2B-23	6			
F	23	0	CUT2B-24	6			
F	24	0	CUT2A-24	0			

EL: 02 CONN. CNTRL TO VU-PANEL J02

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
F	01	0	S-REA-23	6			
F	02	0	S-IN -23	6			
F	03	0	S-REP-23	6			
F	04	0	B-SYN-23	6			
	05	0					
	06	0					
	07	0					
	08	0					
F	09	0	B-RCD-23	6			
F	10	0	B-REA-23	6			
F	11	0	0.0-DIGC				
	12	0					
M	13	0	S-REA-24	2			
M	14	0	S-IN -24	9			
M	15	0	S-REP-24	4			
M	16	0	B-SYN-24	9			
	17	0					
	18	0					
	19	0					
	20	0					
M	21	0	B-RCD-24	2			
M	22	0	B-REA-24	0			

GR: 64 (CONTINUATION)
BASIS UNIT CH23-24

EL: 02 (CONTINUATION)

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
	23	0					
	24	0					

EL: 03 CONN. HEAD SIGNALS J03

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
M	01	0	AN-PAM23	0			
M	02	0	0-PAM-23	6			
F	03	0	0-PAM-24	6			
F	04	0	AN-PAM24	0			
M	05	0	GND	9			
M	06	0	GND	9			
F	07	0	GND	9			
F	08	0	GND	9			
M	09	0	ANRECH23	0			
M	10	0	ANRECL23	6			
F	11	0	ANRECL24	6			
F	12	0	ANRECH24	0			
M	13	0	GND	9			
M	14	0	+15.0 -C	0			
M	15	0	-15.0 -C	6			
	16	0					
M	17	0	GND	9			
M	18	0	S-HEAD16	6			
F	19	0	0.0 -C	0			
F	20	0	GND	9			
M	21	0	YERAAH23	0			
M	22	0	YERAAH23	6			
F	23	0	YERAAH24	6			
F	24	0	YERAAH24	0			

EL: 04 CONN. CH. FEED J04

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
F	01	0	0.0-DIGC	0			
F	02	0	+5.0 -C	3			
F	03	0	S-REP1	8			
F	04	0	S-SYN1	8			
F	05	0	S-INM1	1			
F	06	0	S-SYN2	9			
F	07	0	S-REP2	8			
F	08	0	S-CALIB	5			
F	09	0	S-GAIN	4			
F	10	0	S-NAB	7			
F	11	0	S-CCIR	1			
F	12	0	Y-REC	6			
M	13	0	Y-MUTE	7			
M	14	0	0.0 -C	4			
M	15	0	Y-LCW	5			

GR: 64 (CONTINUATION)
BASIS UNIT CH23-24

EL: 04 (CONTINUATION)

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
M	16	0	YPS-REC	3			
	17	0					
F	18	0	S-INW2	9			
F	19	0	-15.0 -C	6			
F	20	0	+15.0 -C	2			
F	21	0	0-ERAS	5			
F	22	0	0-BIAS	3			
F	23	0	YAC-ERAS	6			
F	24	0	YAC-BIAS	4			

EL: 05 CONN. DELAY UNIT J05

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
F	01	0	Y-RECE23	9			
F	02	0	Y-RECB23	9			
F	03	0	Y-RECI23	9			
F	04	0	Y-RECC23	9			
	05	0					
	06	0					
	07	0					
	08	C					
M	09	0	Y-RECE24	3			
M	10	0	Y-RECB24	3			
M	11	0	Y-RECI24	3			
M	12	0	Y-RECC24	3			

GR: 69 1.180.760.00
 JUNCTION BOX CHC1-08

EL: 01 CONN. MASTER- VU-PANEL J01

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
M	01	0	0.0-DIGA	0			
M	02	0	+ 5.0 -A 3				
M	03	0	S-REPM1	2			
M	04	0	S-SYNM1	3			
F	05	0	S-INM1	1			
F	06	0	S-SYNM2	9			
F	07	0	S-REPM2	8			
F	08	0	S-CALIB	5			
F	09	0	S-GAIN	2			
F	10	0	S-NAB	8			
F	11	0	S-CCIR	1			
F	12	0	ACA12 -A 9				
F	13	0	ACB12 -A 8				
F	14	0	ACA12 -A 9				
F	15	0	ACB12 -A 8				
F	16	0	AUDCMINH	9			
F	17	0	S-LCCIN	0			
F	18	0	S-INM2	6			
F	19	0	-15.0 -A 6				
F	20	0	+15.0 -A 2				
F	21	0	S-REMIN	0			
F	22	0	+24.0 1				
F	23	0	0.0-DIGA	0			
F	24	0	S-INDCTL	5			

EL: 02 CONN. PCWER SUPPLY J02

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
F	01	0	0.0-DIGA	0			
F	02	0	+ 5.0 -A 3				
	03	0					
	04	0					
	05	0					
	06	0					
	07	0					
	08	0					
	09	0					
	10	0					
	11	0					
M	12	0	ACA12 -A 9				
F	13	0	ACB12 -A 8				
F	14	0	0.0 -A 4				
F	15	0	+ 0.0 0				
	16	0					
F	17	0	+24.0 1				
	18	0					
F	19	0	-15.0 -A 6				
F	20	0	+15.0 -A 2				
	21	0					
	22	0					

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GR: 69 (CONTINUATION)
 JUNCTION BOX CHC1-08

EL: 02 (CONTINUATION)

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
	23	C					
	24	0					

EL: 03 CONN. CH. FEED J03

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
F	01	0	0.0-DIGA	0			
F	02	0	+ 5.0 -A 3				
F	03	0	S-REPM1	2			
F	04	0	S-SYNM1	3			
F	05	0	S-INM1	1			
F	06	0	S-SYNM2	9			
F	07	0	S-REPM2	8			
F	08	0	S-CALIB	5			
F	09	0	S-GAIN	2			
F	10	0	S-NAB	8			
F	11	0	S-CCIR	1			
F	12	0	Y-REC	6			
M	13	0	Y-MUTE	7			
M	14	0	0.0 -A 4				
M	15	0	Y-LCW	5			
M	16	0	YPS-REC	3			
F	17	0	S-HEAD16	4			
F	18	C	S-INM2	6			
F	19	0	-15.0 -A 6				
F	20	0	+15.0 -A 2				
F	21	C	C-ERAS	5			
F	22	0	0-BIAS	3			
F	23	0	YAC-ERAS	6			
F	24	0	YAC-BIAS	4			

EL: 04 CONN. LGWER CH. LEVEL J04

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
F	01	0	S-HEAD16	4			
F	02	0	S-INDCTL	5			
F	03	0	S-REPM1	2			
F	04	0	S-SYNM1	3			
F	05	0	S-INM1	1			
F	06	0	S-SYNM2	9			
F	07	C	S-REPM2	8			
F	08	C	S-CALIB	5			
F	09	0	S-GAIN	2			
F	10	0	S-NAB	8			
F	11	0	S-CCIR	1			
F	12	0	Y-REC	6			
F	13	0	Y-MUTE	7			
F	14	C	+ 0.0 0				
F	15	0	Y-LCW	5			

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GR: 69 (CONTINUATION)
 JUNCTION BOX CHC1-08

EL: 04 (CONTINUATION)

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
F	16	0	YPS-REC	3			
M	17	0	+24.0 1				
M	18	0	S-INM2	6			
M	19	0	S-REMIN	0			
M	20	0	S-LCCIN	0			
F	21	0	0-ERAS	5			
F	22	C	0-BIAS	3			
F	23	0	YAC-ERAS	6			
F	24	0	YAC-BIAS	4			

EL: 06 CONN. TAPE DECK J06

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
	C1	0					
	02	0					
	03	0					
	04	0					
	05	C					
	06	0					
M	C7	C	AUDCMINH	9			
	08	0	Y-MCC1	3			
	09	0					
	10	0					
M	11	C	Y-REC	6			
M	12	0	YPS-FEC	3			
M	13	0	+ 0.0 0				
	14	0	S-INM1	1			
	15	0	S-INM2	6			
	16	C					
	17	0	S-REPM1	2			
	18	0	S-REPM2	8			
M	19	C	Y-LCW	5			
M	20	C	Y-MUTE	7			
F	21	0	+24.0 1				
	22	0					
	23	C					
	24	0					

GR: 70 1.180.761.00
 JUNCTION BOX CHC9-16

EL: 01 CONN. VU-PANEL J01

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
M	01	0	0.0-DIGB	0			
M	02	0	+ 5.0 -B 3				
M	03	0	S-REPM1	2			
M	04	0	S-SYNM1	3			
F	05	0	S-INM1	1			
F	06	0	S-SYNM2	9			
F	07	0	S-REPM2	8			
F	08	0	S-CALIB	5			
F	09	0	S-GAIN	2			
F	10	0	S-NAB	8			
F	11	0	S-CCIR	1			
F	12	0	ACA12 -B 9				
F	13	0	ACB12 -B 8				
F	14	0	ACA12 -B 9				
F	15	0	ACB12 -B 8				
F	17	0	S-LCCIN	0			
F	18	0	S-INM2	6			
F	19	0	-15.0 -B 6				
F	20	0	+15.0 -B 2				
F	21	0	S-REMIN	0			
F	22	0	+24.0 1				
F	23	0	0.0-DIGB	0			
F	24	0	S-INDCTL	5			

EL: 02 CONN. PCWER SUPPLY J02

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
F	01	0	0.0-DIGB	0			
F	02	0	+ 5.0 -B 3				
	03	0					
	04	0					
	05	0					
	06	0					
	07	0					
	08	0					
	09	0					
	10	0					
	11	0					
M	12	0	ACA12 -B 9				
F	13	0	ACB12 -B 8				
F	14	0	0.0 -B 4				
F	15	0	+ 0.0 0				
	16	0					
F	17	0	+24.0 1				
	18	0					
F	19	0	-15.0 -B 6				
F	20	0	+15.0 -B 2				
	21	0					
	22	0					
	23	0					

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GR: 70 (CONTINUATION)
 JUNCTION BOX CHC9-16

EL: 02 (CONTINUATION)

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
	24	0					

EL: 03 CONN. CH. FEED J03

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
F	01	0	0.0-DIGB	0			
F	02	0	+ 5.0 -B 3				
F	03	C	S-REPM1	2			
F	04	0	S-SYNM1	3			
F	05	0	S-INM1	1			
F	06	C	S-SYNM2	9			
F	07	0	S-REPM2	8			
F	08	0	S-CALIB	5			
F	09	0	S-GAIN	2			
F	10	0	S-NAB	8			
F	11	0	S-CCIR	1			
F	12	C	Y-REC	6			
M	13	C	Y-MUTE	7			
M	14	0	0.0 -B 4				
M	15	C	Y-LCW	5			
M	16	0	YPS-REC	3			
	17	0					
F	18	C	S-INM2	6			
F	19	0	-15.0 -B 6				
F	20	0	+15.0 -B 2				
F	21	C	C-ERAS	5			
F	22	0	C-BIAS	3			
F	23	0	YAC-ERAS	6			
F	24	0	YAC-BIAS	4			

EL: 04 CONN. LGWER CH. LEVEL J04

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
F	01	0	S-HEAD16	4			
F	02	C	S-INDCTL	5			
F	03	0	S-REPM1	2			
F	04	0	S-SYNM1	3			
F	05	0	S-INM1	1			
F	06	0	S-SYNM2	9			
F	07	0	S-REPM2	8			
F	08	C	S-CALIB	5			
F	09	0	S-GAIN	2			
F	10	0	S-NAB	8			
F	11	C	S-CCIR	1			
F	12	0	Y-REC	6			
F	13	0	Y-MUTE	7			
F	14	0	+ 0.0	0			
F	15	0	Y-LOW	5			
F	16	0	YPS-REC	3			

GR: 71 1.180.761.00
JUNCTION BOX CH17-24

EL: 01 CONN. VU-PANEL J01						
TYPE	PT	LV	SIG.NAME	COLOR	F	X Y
M	01	0	0.0-DIGC	0		
M	02	0	+ 5.0 -C	3		
M	03	0	S-REPM1	2		
M	04	0	S-SYNM1	3		
F	05	0	S-INM1	1		
F	06	0	S-SYNM2	9		
F	07	0	S-REPM2	8		
F	08	0	S-CALIB	5		
F	09	0	S-GAIN	2		
F	10	0	S-NAB	8		
F	11	0	S-CCIR	1		
F	12	0	ACA12 -C	9		
F	13	0	ACB12 -C	8		
F	14	0	ACA12 -C	9		
F	15	0	ACB12 -C	8		
F	17	0	S-LCCIN	0		
F	18	0	S-INM2	6		
F	19	0	-15.0 -C	6		
F	20	0	+15.0 -C	2		
F	21	0	S-REMIN	0		
F	22	0	+24.0	1		
F	23	0	0.0-DIGC	0		
F	24	0	S-INDCTL	5		

EL: 02 CONN. PCWER SUPPLY J02						
TYPE	PT	LV	SIG.NAME	COLOR	F	X Y
F	01	0	0.0-DIGC	0		
F	02	0	+ 5.0 -C	3		
	03	0				
M	04	0	S-HEAD16	4		
	05	0				
	06	0				
	07	0				
	08	0				
	09	0				
	10	0				
	11	0				
M	12	0	ACA12 -C	9		
F	13	0	ACB12 -C	8		
F	14	0	0.0 -C	4		
F	15	0	+ 0.0	0		
	16	0				
F	17	0	+24.0	1		
	18	0				
F	19	0	-15.0 -C	6		
F	20	0	+15.0 -C	2		
	21	0				
	22	0				
	23	0				

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GR: 71 (CONTINUATION)
JUNCTION BOX CH17-24

EL: 02 (CONTINUATION)						
TYPE	PT	LV	SIG.NAME	COLOR	F	X Y
	24	0				
EL: 03 CCNA. CH. FEED J03						
TYPE	PT	LV	SIG.NAME	COLOR	F	X Y
F	01	0	0.0-DIGC	0		
F	02	0	+ 5.0 -C	3		
F	03	0	S-REPM1	2		
F	04	0	S-SYNM1	3		
F	05	0	S-INM1	1		
F	06	0	S-SYNM2	9		
F	07	0	S-REPM2	8		
F	08	0	S-CALIB	5		
F	09	0	S-GAIN	2		
F	10	0	S-NAB	8		
F	11	0	S-CCIR	1		
F	12	0	Y-REC	6		
M	13	0	Y-MUTE	7		
M	14	0	0.0 -C	4		
M	15	0	Y-LCW	5		
M	16	0	YPS-REC	3		
	17	0				
F	18	0	S-INM2	6		
F	19	0	-15.0 -C	6		
F	20	0	+15.0 -C	2		
F	21	0	0-ERAS	5		
F	22	0	0-BIAS	3		
F	23	0	YAC-ERAS	6		
F	24	0	YAC-BIAS	4		

EL: 04 CONN. LCWER CH. LEVEL J04						
TYPE	PT	LV	SIG.NAME	COLOR	F	X Y
	01	0				
F	02	0	S-INDCTL	5		
F	03	0	S-REPM1	2		
F	04	0	S-SYNM1	3		
F	05	0	S-INM1	1		
F	06	0	S-SYNM2	9		
F	07	0	S-REPM2	8		
F	08	0	S-CALIB	5		
F	09	0	S-GAIN	2		
F	10	0	S-NAB	8		
F	11	0	S-CCIR	1		
F	12	0	Y-REC	6		
F	13	0	Y-MUTE	7		
F	14	0	+ 0.0	0		
F	15	0	Y-LOW	5		
F	16	0	YPS-REC	3		

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GR: 71 (CONTINUATION)
JUNCTION BCX CH17-24

EL: 04 (CONTINUATION)						
TYPE	PT	LV	SIG.NAME	COLOR	F	X Y
M	17	0	+24.C	1		
M	18	0	S-INM2	6		
M	19	0	S-REMIN	0		
M	20	0	S-LCCIN	0		
F	21	0	0-ERAS	5		
F	22	0	0-BIAS	3		
F	23	0	YAC-ERAS	6		
F	24	0	YAC-BIAS	4		

GR: 72 1.180.770.00
MASTER PANEL

EL: 01 CONN. JUNCTION BOX J01						
TYPE	PT	LV	SIG.NAME	COLOR	F	X Y
B	01	0	+ 5.0 -A	3		
B	02	0	+ 5.0 -A	3		
	03	0	KEY			
B	04	0	0.0-DIGA	0		
B	05	0	0.0-DIGA	0		
B	06	0	S-REMIN	0		
B	07	0	S-REMIN	0		
	08	0				
B	09	0				
B	10	0	S-LCCIN	0		
B	11	0	S-LCCIN	0		
B	12	0	S-REPM1	2		
B	13	0	S-REPM1R	2		
	14	0				
	15	0				
B	16	0	S-INDCTL	5		
B	17	0	S-INDCTL	5		
B	18	0	S-SYNM1	3		
B	19	0	S-SYNM1R	3		
	20	0				
	21	0				
B	22	0	0.0-DIGA	0		
B	23	0				
B	24	0	S-INM1	1		
B	25	0	S-INM1R	1		
	26	0				
	27	0				
B	28	0	S-SYNM2	9		
B	29	0	S-SYNM2R	9		
	30	0				
	31	0				
B	32	0	S-REPM2	8		
B	33	0	S-REPM2R	8		
	34	0				
B	35	0	+15.0 -A	9		
B	36	0	+15.0 -A	2		
B	37	0	-15.0 -A	6		
B	38	0	-15.0 -A	6		
	39	0				
B	40	0	S-CCIR	1		
B	41	0	S-NAB	8		
	42	0				
	43	0				
	44	0				
B	45	0	S-CALIB	5		
	46	0	KEY			
B	47	0	S-GAIN	2		
B	48	0	AUCCMINH	9		
B	49	0	S-INM2	6		
B	50	0	S-INM2R	6		

GR: 72 (CONTINUATION)
MASTER PANEL

EL: 02 CONN. TAPE DECK J02						
TYPE	PT	LV	SIG.NAME	COLOR	F	X Y
B	01	0	S-RECCFF	9		
B	02	0	Y-REHEAR	5		
	03	0	KEY			
B	04	0	DIDELINH	6		
B	05	0	CRAZCAN	2		
	06	0				
	07	0				
B	08	0	Y-MUTE	9		
B	09	0	SPOTERAS	6		
B	10	0	HAPRES2	9		
B	11	0	S-MUTE	3		
B	12	0	B-REHEAR	9		
	13	0				
	14	0				
	15	0				
	16	0				
	17	0				
	18	0				
	19	0				
B	20	0	+24.OTLS	1		
B	21	0	S-CODE	3		
B	22	0	+ 0.0	9		
B	23	0	S-REM-TD	8		
	24	0	KEY			
B	25	0	B-SPTERA	9		
EL: 03 MASTER BOARD 2						
TYPE	PT	LV	SIG.NAME	COLOR	F	X Y
	01	0				
V	02	0	+ 0.0	9		
V	03	0	S-REM-TD	8		
V	04	0	+24.OTLS	1		
V	05	0	+24.OTLS	4		
V	06	0	S-CODE	3		
V	07	0	S-CODE	0		
V	08	0	S-LCCIN	0		
V	09	0	S-REMIN	0		
V	09A	0	S-REMIN	0		
	10	0				
V	11	0	+ 5 LED	8		
V	12	0	CCHREMTD	3		
V	13	0	0-LTLS	0		
V	14	0	Y-MUTE	9		
V	14A	0	S-MUTE	3		
V	15	0	Y-REHEAR	5		
V	16	0	DIDELINH	6		
V	17	0	CRAZCAN	2		
V	18	0	SPOTERAS	6		
	19	0				

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GR: 72 (CONTINUATION)
MASTER PANEL

EL: 03 (CONTINUATION)						
TYPE	PT	LV	SIG.NAME	COLOR	F	X Y
V	20	0	0.0-DIGA	0		
V	21	0	+ 5.C -A	3		
	22	0				
V	23	0	AUDCPINH	9		
V	24	0	B-REFEAR	9		
V	25	0	B-SPTERA	9		
EL: 04 MASTER BOARD 3						
TYPE	PT	LV	SIG.NAME	COLOR	F	X Y
V	01	0	S-GAIN	2		
V	02	0	S-CALIB	5		
V	03	0	S-CCIR	1		
V	04	0	S-NAE	8		
V	05	0	-15.C -A	6		
V	06	0	+15.C -A	2		
V	07	0	S-RECCFF	9		
V	08	0	0.0-DIGA	0		
V	09	0	0.0-DIGA	0		
V	10	0	0.0-DIGA	0		
EL: 05 MASTER BOARD, OUTPUT 1						
TYPE	PT	LV	SIG.NAME	COLOR	F	X Y
V	01	0	S-INM1	1		
V	02	0	S-REPM1	2		
V	03	0	S-SYNM1	3		
V	04	0	S-INCTL5	5		
V	05	0	S-INCTL5	5		
V	06	0	+ 5.C -A	3		
V	07	0	+ 5.0 -A	3		
V	08	0	+ 5.C -A	3		
V	09	0	S-INM1R	1		
V	10	0	S-REPM1R	2		
V	11	0	S-SYNM1R	3		
V	12	0	S-LCCIN	0		
V	13	0	S-LCCIN	0		
V	14	0	S-LCCIN	0		
EL: 06 MASTER BOARD, OUTPUT 2						
TYPE	PT	LV	SIG.NAME	COLOR	F	X Y
V	01	0	S-INM2	6		
V	02	0	S-REPM2	8		
V	03	0	S-SYNM2	9		
	04	0				
	05	0				
	06	0				

GR: 72 (CONTINUATION)
MASTER PANEL

EL: 10 (CONTINUATION)

TYPE	PT	LV	SIG.	NAME	COLOR	F	X	Y
	04D	0						
V	05A	0	-15.0	-A	6			
V	05B	0	-15.0	-A	6			
V	05C	0	-15.0	-A	6			
	05D	0						

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
V	04A	0	+15.0	-A	2		
V	04B	0	+15.0	-A	2		
V	04C	0	+15.0	-A	2		

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GR: 73 (CONTINUATION)
VU PANEL CH01-C8

EL: 02 (CONTINUATION)

TYPE	PT	LV	SIG.	NAME	COLOR	F	X	Y
A	20	0		CUT2A-02	0			
A	21	0		CUT2B-02	6			
A	22	0		CUT2A-03	0			
A	23	0		CUT2B-03	6			
A	24	0		CUT2A-04	0			
A	25	0		CUT2B-04	6			
A	26	0		CUT2A-05	0			
A	27	0		CUT2B-05	6			
A	28	0		CUT2A-06	0			
A	29	0		CUT2B-06	6			
A	30	0		CUT2A-07	0			
A	31	0		CUT2B-07	6			
A	32	C		CUT2A-08	0			
A	33	C		CUT2E-08	6			
A	34	0		CUT1A-01	0			
A	35	C		CUT1E-01	6			
A	36	0		CUT1A-02	0			
A	37	U		CUT1E-02	6			
A	38	C		CUT1A-03	0			
A	39	0		CUT1E-03	6			
A	40	0		CUT1A-04	0			
A	41	C		CUT1E-04	6			
A	42	0		CUT1A-05	0			
A	43	0		CUT1E-05	6			
A	44	0		CUT1A-06	0			
A	45	0		CUT1E-06	6			
A	46	0		CUT1A-07	0			
A	47	C		KEY				
A	48	0		CUT1E-07	6			
A	49	0		CUT1A-08	0			
A	50	C		CUT1E-08	6			

TYPE	PT	LV	SIG.NAME	CCLCR	F	X	Y
A	01	0	INA-01	0			
A	02	0	INB-01	6			
	03	0	KEY				
A	04	0	INA-02	0			
A	05	0	INB-02	6			
A	06	0	INA-03	0			
A	07	0	INB-03	6			
A	08	0	INA-04	0			
A	09	0	INB-04	6			
A	10	0	INA-05	0			
A	11	0	INB-05	6			
A	12	0	INA-06	0			
A	13	0	INB-06	6			
A	14	0	INA-07	0			
A	15	0	INB-07	6			
A	16	0	INA-08	0			
A	17	0	INB-08	6			
A	18	0	OUT2A-01	0			
A	19	0	OUT2B-01	6			

TYPE	PT	LV	SIG.	NAME	COLOR	F	X	Y
A	01	C	INSA-C1	0				
A	02	0	INSB-01	6				
		C3	0	KEY				
A	04	0	INSA-C2	0				
A	05	0	INSE-02	6				
A	C6	C	INSA-C3	0				
A	07	0	INSB-C3	6				
A	08	0	INSA-04	0				
A	C9	0	INSB-C4	6				
A	10	C	INSA-C5	0				
A	11	0	INSE-05	6				
A	12	0	INSA-C6	0				
A	13	C	INSB-C6	6				
A	14	0	INSA-07	0				
A	15	0	INSB-C7	6				

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GR: 73 (CONTINUATION)
VU PANEL CH01-08

EL: 03 (CONTINUATION)

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
A	16	0	INSA-08	0			
A	17	0	INSB-08	6			
A	18	0	OUTS2A01	0			
A	19	0	CUTS2B01	6			
A	20	0	OUTS2A02	0			
A	21	0	OUTS2B02	6			
A	22	0	OUTS2A03	0			
A	23	0	OUTS2B03	6			
A	24	0	OUTS2A04	0			
A	25	0	OUTS2B04	6			
A	26	0	OUTS2A05	0			
A	27	0	OUTS2B05	6			
A	28	0	OUTS2A06	0			
A	29	0	OUTS2B06	6			
A	30	0	OUTS2A07	0			
A	31	0	OUTS2B07	6			
A	32	0	OUTS2A08	0			
A	33	0	OUTS2B08	6			
A	34	0	CUTS1A01	0			
A	35	0	OUTS1B01	6			
A	36	0	OUTS1A02	0			
A	37	0	CUTS1B02	6			
A	38	0	OUTS1A03	0			
A	39	0	OUTS1B03	6			
A	40	0	OUTS1A04	0			
A	41	0	OUTS1B04	6			
A	42	0	OUTS1A05	0			
A	43	0	OUTS1B05	6			
A	44	0	OUTS1A06	0			
A	45	0	OUTS1B06	6			
A	46	0	CUTS1A07	0			
A	47	0	OUTS1B07	6			
A	48	0	KEY				
A	49	0	CUTS1A08	0			
A	50	0	OUTS1B08	6			

EL: 04 CCNN. REMOTE CONTROL J04

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
R	01	0	S-REA-01	1			
R	02	0	S-REA-02	2			
R	03	0	S-REA-03	3			
R	04	0	S-REA-04	2			
R	05	0	S-REA-05	5			
R	06	0	S-REA-06	2			
R	07	0	S-REA-07	6			
R	08	0	S-REA-08	2			
R	09	0	S-REP-01	1			
R	10	0	S-REP-02	4			
R	11	0	S-REP-03	3			

GR: 73 (CONTINUATION)
VU PANEL CH01-08

EL: 04 (CONTINUATION)

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
R	12	0	S-REP-04	4			
R	13	0	S-REP-05	5			
R	14	0	S-REP-06	4			
R	15	0	S-REP-07	6			
R	16	0	S-REP-08	4			
R	17	0	S-IN -01	1			
R	18	0	S-IN -02	9			
R	19	0	S-IN -03	3			
R	20	0	S-IN -04	9			
R	21	0	S-IN -05	5			
R	22	0	S-IN -06	9			
R	23	0	S-IN -07	6			
R	24	0	S-IN -08	9			
R	25	0	B-REA-01	1			
R	26	0	B-REA-02	0			
R	27	0	B-REA-03	3			
R	28	0	B-REA-04	0			
R	29	0	B-REA-05	5			
R	30	0	B-REA-06	0			
R	31	0	B-REA-07	6			
R	32	0	B-REA-08	0			
R	33	0	B-RCD-01	1			
R	34	0	B-RCD-02	2			
R	35	0	B-RCD-03	3			
R	36	0	B-RCD-04	2			
R	37	0	B-RCD-05	5			
R	38	0	B-RCD-06	2			
R	39	0	B-RCD-07	6			
R	40	0	B-RCD-08	2			
R	41	0	B-SYN-01	1			
R	42	0	B-SYN-02	9			
R	43	0	B-SYN-03	3			
R	44	0	B-SYN-04	9			
R	45	0	B-SYN-05	5			
R	46	0	B-SYN-06	9			
R	47	0	B-SYN-07	6			
R	48	0	B-SYN-08	5			
R	49	0					
R	50	0					
R	51	0					
R	52	0					
R	53	0	C.O-DIGA	0			
R	54	0	+ 5.0 -A	3			
R	55	0					
R	56	0	S-REMIN	0			
R	57	0					
R	58	0					
R	59	0					
R	60	0					
R	61	0					
R	62	0					

GR: 73 (CONTINUATION)
VU PANEL CH01-08

EL: 04 (CONTINUATION)

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
	63	0					
	64	0					
	65	0					
	66	0					
	67	0					
	68	0					
	69	0					
	70	0					
R	71	0	S-REPM1R	2			
R	72	0	S-SYMP1R	3			
R	73	0	S-INP1R	1			
R	74	0	S-IMP2R	6			
R	75	0	S-SYMP2R	9			
	76	0	KEY				
	77	0	KEY				
R	78	0	S-REPM2R	8			

EL: 05 CCNN. NCISE REDUCTICN SYST. J05

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
B	01	0	B-BCY-01	1			
B	02	0	B-BDY-02	2			
B	03	0	B-BCY-03	3			
	04	0	KEY				
B	05	0	B-BDY-04	2			
B	06	0	B-BCY-05	5			
	07	0					
	08	0					
	09	0					
B	10	0	B-BCY-06	2			
B	11	0	B-BDY-07	6			
	12	0	KEY				
B	13	0	B-BCY-08	2			
B	14	0	+24. C	1			
B	15	0	0.0-CIGA	0			

EL: 11 CCNN. XLR OUT 1 CH01 P11

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
L	01	0	GND	9			
L	02	0	CUTS1A01	0			
L	03	0	OUTS1B01	6			

EL: 12 CCNN. XLR OUT 1 CH02 P12

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
L	01	0	GND	9			
L	02	0	OUTS1A02	0			

GR: 73 (CONTINUATION)
VU PANEL CH01-08

EL: 12 (CONTINUATION)

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
L	03	0	OUTS1B02	6			

EL: 13 CCNN. XLR OUT 1 CH03 P13

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
L	01	0	GND	9			
L	02	0	OUTS1A03	0			
L	03	0	OUTS1B03	6			

EL: 14 CCNN. XLR OUT 1 CH04 P14

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
L	01	0	GND	9			
L	02	0	OUTS1A04	0			
L	03	0	OUTS1B04	6			

EL: 15 CCNN. XLR OUT 1 CH05 P15

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
L	01	0	GND	9			
L	02	0	OUTS1A05	0			
L	03	0	OUTS1B05	6			

EL: 16 CCNN. XLR OUT 1 CH06 P16

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
L	01	0	GND	9			
L	02	0	OUTS1A06	0			
L	03	0	OUTS1B06	6			

EL: 17 CCNN. XLR OUT 1 CH07 P17

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
L	01	0	GND	9			
L	02	0	OUTS1A07	0			
L	03	0	OUTS1B07	6			

EL: 18 CCNN. XLR OUT 1 CH08 P18

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
L	01	0	GND	9			
L	02	0	OUTS1A08	0			
L	03	0	CUTS1B08	6			

GR: 73 (CONTINUATION)
VU PANEL CH01-08

EL: 21 CCNN. XLR OUT 2 CH01 P21

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
L	01	0	GND	9			
L	02	0	CUTS2A01	0			
L	03	0	OUTS2B01	6			

EL: 22 CCNN. XLR OUT 2 CH02 P22

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
L	01	0	GND	9			
L	02	0	OUTS2A02	0			
L	03	0	CUTS2B02	6			

EL: 23 CCNN. XLR OUT 2 CH03 P23

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
L	01	0	GND	9			
L	02	0	OUTS2A03	0			
L	03	0	CUTS2B03	6			

EL: 24 CCNN. XLR OUT 2 CH04 P24

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
L	01	0	GND	9			
L	02	0	CUTS2A04	0			
L	03	0	CUTS2B04	6			

EL: 25 CCNN. XLR OUT 2 CH05 P25

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
L	01	0	GND	9			
L	02	0	CUTS2A05	0			
L	03	0	CUTS2B05	6			

EL: 26 CCNN. XLR OUT 2 CH06 P26

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
L	01	0	GND	9			
L	02	0	OUTS2A06	0			
L	03	0	CUTS2B06	6			

EL: 27 CCNN. XLR OUT 2 CH07 P27

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
L	01	0	GND	9			
L	02	0	CUTS2A07	0			
L	03	0	CUTS2B07	6			

GR: 73 (CONTINUATION)
VU PANEL CH01-08

EL: 28 CCNN. XLR CUT 2 CH08 P28

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
L	01	0	GND	9			
L	02	0	CUTS2A08	0			
L	03	0	OUTS2B08	6			

EL: 31 CCNN. XLR INPUT CH01 J31

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
L	01	0	GND	9			
L	02	0	INSA-C1	0			
L	03	0	INSB-C1	6			

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GR: 73 (CONTINUATION)
VU PANEL CH01-08

EL: 37 CONN. XLR INPUT CH07 J37

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
L	01	0	GND	9			
L	02	0	INSA-07	0			
L	03	0	INSB-07	6			

EL: 38 CONN. XLR INPUT CH08 J38

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
L	01	0	GND	9			
L	02	0	INSA-08	0			
L	03	0	INSB-08	6			

GR: 74 1.18G.775.CC
VU PANEL CH09-16

EL: 01 CONN. CONTROL BASIS UNITS J01

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
R	01	0	0.0-DIGB	0			
R	02	0	KEY				
R	03	0	S-REA-09	1			
R	04	0	S-REA-10	2			
R	05	0	S-REA-11	3			
R	06	0	S-REA-12	2			
R	07	0	S-REA-13	5			
R	08	0	S-REA-14	2			
R	09	0	S-REA-15	6			
R	10	0	S-REA-16	2			
R	11	0	S-REP-09	1			
R	12	0	S-REP-10	4			
R	13	0	S-REP-11	3			
R	14	0	S-REP-12	4			
R	15	0	S-REP-13	5			
R	16	0	S-REP-14	4			
R	17	0	S-REP-15	6			
R	18	0	S-REP-16	4			
R	19	0	S-IN -09	1			
R	20	0	S-IN -10	9			
R	21	0	S-IN -11	3			
R	22	0	S-IN -12	9			
R	23	0	S-IN -13	5			
R	24	0	S-IN -14	9			
R	25	0	S-IN -15	6			
R	26	0	S-IN -16	9			
R	27	0	B-REA-09	1			
R	28	0	B-REA-10	0			
R	29	0	B-REA-11	3			
R	30	0	B-REA-12	0			
R	31	0	B-REA-13	5			
R	32	0	B-REA-14	0			
R	33	0	B-REA-15	6			
R	34	0	B-REA-16	0			
R	35	0	B-RCD-09	1			
R	36	0	B-RCD-10	2			
R	37	0	B-RCD-11	3			
R	38	0	B-RCD-12	2			
R	39	0	B-RCD-13	5			
R	40	0	B-RCD-14	2			
R	41	0	B-RCD-15	6			
R	42	0	B-RCD-16	2			
R	43	0	B-SYN-09	1			
R	44	0	B-SYN-10	9			
R	45	0	B-SYN-11	3			
R	46	0	B-SYN-12	9			
R	47	0	B-SYN-13	5			
R	48	0	B-SYN-14	9			
R	49	0	B-SYN-15	6			
R	50	0	B-SYN-16	9			
R	51	0	S-LCCIN	0			

GR: 74 (CONTINUATION)
VU PANEL CH09-16

EL: 01 (CONTINUATION)

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
R	52	0	+24.C	1			
R	53	0	0.0-EIGB	0			
R	54	0	+5.C -B	3			
R	55	0	S-1ACCTL	5			
			56 C				
			57 0				
			58 0				
R	59	0	ACA12 -B	9			
R	60	0	ACB12 -B	8			
R	61	0	-15.C -B	8			
R	62	0	+15.C -B	2			
			63 0				
			64 0				
			65 C				
			66 0				
			67 0				
			68 0				
			69 0				
			70 0				
			71 C				
			72 0				
			73 0				
			74 0				
			75 0				
R	76	0	ACA12 -B	9			
			77 C KEY				
R	78	0	ACB12 -B	8			

EL: 02 CONN. AUDIO BASIS UNITS P02

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
A	01	0	INA-C5	0			
A	02	0	INB-09	6			
			03 0 KEY				
A	04	0	INA-10	0			
A	05	0	INB-10	6			
A	06	0	INA-11	0			
A	07	0	INB-11	6			
A	08	0	INA-12	0			
A	09	0	INB-12	6			
A	10	0	INA-13	0			
A	11	0	INB-13	6			
A	12	0	INA-14	0			
A	13	0	INB-14	6			
A	14	0	INA-15	0			
A	15	0	INB-15	6			
A	16	0	INA-16	0			
A	17	0	INB-16	6			
A	18	0	OUT2A-C9	0			
A	19	0	OUT2B-C9	6			

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GR: 74 (CONTINUATION)
VU PANEL CH09-16

EL: 02 (CONTINUATION)

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
A	20	0	OUT2A-10	0			
A	21	0	OUT2B-10	6			
A	22	0	OUT2A-11	0			
A	23	0	OUT2B-11	6			
A	24	0	OUT2A-12	0			
A	25	0	OUT2B-12	6			
A	26	0	OUT2A-13	0			
A	27	0	OUT2B-13	6			
A	28	0	OUT2A-14	0			
A	29	0	OUT2B-14	6			
A	30	0	OUT2A-15	0			
A	31	0	OUT2B-15	6			
A	32	0	OUT2A-16	0			
A	33	0	OUT2B-16	6			
A	34	0	OUT1A-09	0			
A	35	0	OUT1B-09	6			
A	36	0	OUT1A-10	0			
A	37	0	OUT1B-10	6			
A	38	0	OUT1A-11	0			
A	39	0	OUT1B-11	6			
A	40	0	OUT1A-12	0			
A	41	0	OUT1B-12	6			
A	42	0	OUT1A-13	0			
A	43	0	OUT1B-13	6			
A	44	0	OUT1A-14	0			
A	45	0	OUT1B-14	6			
A	46	0	OUT1A-15	0			
A	47	0	KEY				
A	48	0	OUT1B-15	6			
A	49	0	OUT1A-16	0			
A	50	0	OUT1B-16	6			

EL: 03 CONN. AUDIO LINE IN / OUT P03

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
A	01	0	INSA-09	0			
A	02	0	INSB-09	6			
			03 0 KEY				
A	04	0	INSA-10	0			
A	05	0	INSB-10	6			
A	06	0	INSA-11	0			
A	07	0	INSB-11	6			
A	08	0	INSA-12	0			
A	09	0	INSB-12	6			
A	10	0	INSA-13	0			
A	11	0	INSB-13	6			
A	12	0	INSA-14	0			
A	13	0	INSB-14	6			
A	14	0	INSA-15	0			
A	15	0	INSB-15	6			

GR: 74 (CONTINUATION)
VU PANEL CH09-16

EL: 03 (CONTINUATION)

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
A	16	0	INSA-16	0			
A	17	0	INSB-16	6			
A	18	0	CUTS2A09	0			
A	19	0	CUTS2B09	6			
A	20	0	CUTS2A10	0			
A	21	0	CUTS2B10	6			
A	22	0	CUTS2A11	0			
A	23	0	CUTS2B11	6			
A	24	0	CUTS2A12	0			
A	25	0	CUTS2B12	6			
A	26	0	CUTS2A13	0			
A	27	0	CUTS2B13	6			
A	28	0	CUTS2A14	0			
A	29	0	CUTS2B14	6			
A	30	0	CUTS2A15	0			
A	31	0	CUTS2B15	6			
A	32	0	CUTS2A16	0			
A	33	0	CUTS2B16	6			
A	34	0	CUTS1A09	0			
A	35	0	CUTS1B09	6			
A	36	0	CUTS1A10	0			
A	37	0	CUTS1B10	6			
A	38	0	CUTS1A11	0			
A	39	0	CUTS1B11	6			
A	40	0	CUTS1A12	0			
A	41	0	CUTS1B12	6			
A	42	0	CUTS1A13	0			
A	43	0	CUTS1B13	6			
A	44	0	CUTS1A14	0			
A	45	0	CUTS1B14	6			
A	46	0	CUTS1A15	0			
A	47	0	CUTS1B15	6			
A	48	0	KEY				
A	49	0	CUTS1A16	0			
A	50	0	CUTS1B16	6			

EL: 04 CONN. REMOTE CONTRCL J04

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
R	01	0	S-REA-09	1			
R	02	0	S-REA-10	2			
R	03	0	S-REA-11	3			
R	04	0	S-REA-12	2			
R	05	0	S-REA-13	5			
R	06	0	S-REA-14	2			
R	07	0	S-REA-15	6			
R	08	0	S-REA-16	2			
R	09	0	S-REP-09	1			
R	10	0	S-REP-10	4			
R	11	0	S-REP-11	3			

GR: 74 (CONTINUATION)
VU PANEL CH09-16

EL: 04 (CONTINUATION)

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
R	12	0	S-REP-12	4			
R	13	0	S-REP-13	5			
R	14	0	S-REP-14	4			
R	15	0	S-REP-15	6			
R	16	0	S-REP-16	4			
R	17	0	S-IN -09	1			
R	18	0	S-IN -10	9			
R	19	0	S-IN -11	3			
R	20	0	S-IN -12	9			
R	21	0	S-IN -13	5			
R	22	0	S-IN -14	9			
R	23	0	S-IN -15	6			
R	24	0	S-IN -16	9			
R	25	0	B-REA-09	1			
R	26	0	B-REA-10	0			
R	27	0	B-REA-11	3			
R	28	0	B-REA-12	0			

GR: 74 (CONTINUATION)
VU PANEL CH09-16

EL: 04 (CONTINUATION)

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
	63	0					
	64	0					
	65	0					
	66	0					
	67	0					
	68	0					
	69	0					
	70	0					
R	71	0	S-REPM1R 2				
R	72	0	S-SYNM1R 3				
R	73	0	S-INM1R 1				
R	74	0	S-INM2R 6				
R	75	0	S-SYNM2R 9				
	76	0	KEY				
	77	0	KEY				
R	78	0	S-REPM2R 8				

EL: 05 CONN. NCISE REDUCTION SYST. J05

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
B	01	0	B-BDY-09 1				
B	02	0	B-BDY-10 2				
B	03	0	B-BDY-11 3				
	04	0	KEY				
B	05	0	B-BDY-12 2				
B	06	0	B-BDY-13 5				
	07	0					
	08	0					
	09	0					
B	10	0	B-BDY-14 2				
B	11	0	B-BDY-15 6				
	12	0	KEY				
B	13	0	B-BDY-16 2				
B	14	0	+24.0 1				
B	15	0	0.0-DIGB 0				

GR: 75 1.180.775.CC
VU PANEL CH17-24

EL: 01 CONN. CONTROL BASIS UNITS J01

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
R	01	0	C.0-DIGC 0				
	02	0	KEY				
R	03	0	S-REA-17 1				
R	04	0	S-REA-18 2				
R	05	0	S-REA-19 3				
R	06	0	S-REA-20 2				
R	07	0	S-REA-21 5				
R	08	0	S-REA-22 2				
R	09	0	S-REA-23 6				
R	10	0	S-REA-24 2				
R	11	0	S-REP-17 1				
R	12	0	S-REP-18 4				
R	13	0	S-REP-19 3				
R	14	0	S-REP-20 4				
R	15	0	S-REP-21 5				
R	16	0	S-REP-22 4				
R	17	0	S-REP-23 6				
R	18	0	S-REP-24 4				
R	19	0	S-IN -17 1				
R	20	0	S-IN -18 9				
R	21	0	S-IN -19 3				
R	22	0	S-IN -20 9				
R	23	0	S-IN -21 5				
R	24	0	S-IN -22 9				
R	25	0	S-IN -23 6				
R	26	0	S-IN -24 9				
R	27	0	B-REA-17 1				
R	28	0	B-REA-18 0				
R	29	0	B-REA-19 3				
R	30	0	B-REA-20 2				
R	31	0	B-REA-21 5				
R	32	0	B-REA-22 0				
R	33	0	B-REA-23 6				
R	34	0	B-REA-24 0				
R	35	0	B-RCD-17 1				
R	36	0	B-RCD-18 2				
R	37	0	B-RCD-19 3				
R	38	0	B-RCD-20 2				
R	39	0	B-RCD-21 5				
R	40	0	B-RCD-22 2				
R	41	0	B-RCD-23 6				
R	42	0	B-RCD-24 2				
R	43	0	B-SYN-17 1				
R	44	0	B-SYN-18 9				
R	45	0	B-SYN-19 3				
R	46	0	B-SYN-20 9				
R	47	0	B-SYN-21 5				
R	48	0	B-SYN-22 5				
R	49	0	B-SYN-23 6				
R	50	0	B-SYN-24 9				
R	51	0	S-LOCIN 0				

GR: 75 (CONTINUATION)
VU PANEL CH17-24

EL: 01 (CONTINUATION)

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
R	52	0	+24.C 1				
R	53	0	0.0-EIGC 0				
R	54	0	+ 5.C -C 3				
R	55	0	S-INCTL 5				
	56	0					
	57	0					
	58	0					
R	59	0	ACA12 -C 9				
R	60	0	ACB12 -C 8				
R	61	0	-15.C -C 8				
R	62	0	+15.C -C 2				
	63	0					
	64	0					
	65	0					
	66	0					
	67	0					
	68	0					
	69	0					
	70	0					
	71	0					
	72	0					
	73	0					
	74	0					
	75	0					
R	76	0	ACA12 -C 9				
	77	0	KEY				
R	78	0	ACB12 -C 8				

EL: 02 CONN. AUDIO BASIS UNITS P02

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
A	01	0	INA-17 0				
A	02	0	INB-17 6				
	03	0	KEY				
A	04	0	INA-18 0				
A	05	0	INB-18 6				
A	06	0	INA-19 0				
A	07	0	INB-19 6				
A	08	0	INA-20 0				
A	09	0	INB-20 6				
A	10	0	INA-21 0				
A	11	0	INB-21 6				
A	12	0	INA-22 0				
A	13	0	INB-22 6				
A	14	0	INA-23 0				
A	15	0	INB-23 6				
A	16	0	INA-24 0				
A	17	0	INB-24 6				
A	18	0	OUT2A-17 0				
A	19	0	OUT2E-17 6				

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GR: 75 (CONTINUATION)
VU PANEL CH17-24

EL: 02 (CONTINUATION)

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
A	20	0	OUT2A-18 0				
A	21	0	OUT2B-18 6				
A	22	0	OUT2A-19 0				
A	23	0	OUT2B-19 6				
A	24	0	OUT2A-20 0				
A	25	0	OUT2B-20 6				
A	26	0	OUT2A-21 0				
A	27	0	OUT2B-21 6				
A	28	0	OUT2A-22 0				
A	29	0	OUT2B-22 6				
A	30	0	OUT2A-23 0				
A	31	0	OUT2B-23 6				
A	32	0	OUT2A-24 0				
A	33	0	OUT2B-24 6				
A	34	0	OUT1A-17 0				
A	35	0	OUT1B-17 6				
A	36	0	OUT1A-18 0				
A	37	0	OUT1A-18 6				
A	38	0	OUT1A-19 0				
A	39	0	OUT1B-19 6				
A	40	0	OUT1A-20 0				
A	41	0	OUT1B-20 6				
A	42	0	OUT1A-21 0				
A	43	0	OUT1B-21 6				
A	44	0	OUT1A-22 0				
A	45	0	OUT1B-22 6				
A	46	0	OUT1A-23 0				
	47	0	KEY				
A	48	0	OUT1B-23 6				
A	49	0	OUT1A-24 0				
A	50	0	OUT1B-24 6				

EL: 03 CONN. AUDIO LINE IN / CUT P03

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
A	01	0	INSA-17 0				
A	02	0	INSB-17 6				
	03	0	KEY				
A	04	0	INSA-18 0				
A	05	0	INSB-18 6				
A	06	0	INSA-19 0				
A	07	0	INSB-19 6				
A	08	0	INSA-20 0				
A	09	0	INSB-20 6				
A	10	0	INSA-21 0				
A	11	0	INSB-21 6				
A	12	0	INSA-22 0				
A	13	0	INSB-22 6				
A	14	0	INSA-23 0				
A	15	0	INSB-23 6				

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GR: 75 (CONTINUATION)
VU PANEL CH17-24

EL: 03 (CONTINUATION)

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
A	16	0	INSA-24 0				
A	17	0	INSB-24 6				
A	18	0	CUTS2A17 0				
A	19	0	CUTS2B17 6				
A	20	0	CUTS2A18 0				
A	21	0	CUTS2B18 6				
A	22	0	CUTS2A19 0				
A	23	0	CUTS2B19 6				
A	24	0	CUTS2A20 0				
A	25	0	CUTS2B20 6				
A	26	0	CUTS2A21 0				
A	27	0	CUTS2B21 6				
A	28	0	CUTS2A22 0				
A	29	0	CUTS2B22 6				
A	30	0	CUTS2A23 0				
A	31	0	CUTS2B23 6				
A	32	0	CUTS2A24 0				
A	33	0	CUTS2B24 6				
A	34	0	CUTS1A17 0				
A	35	0	CUTS1B17 6				
A	36	0	CUTS1A18 0				
A	37	0	CUTS1B18 6				
A	38	0	CUTS1A19 0				
A	39	0	CUTS1B19 6				
A	40	0	CUTS1A20 0				
A	41	0	CUTS1B20 6				
A	42	0	CUTS1A21 0				
A	43	0	CUTS1B21 6				
A	44	0	CUTS1A22 0				
A	45	0	CUTS1B22 6				
A	46	0	CUTS1A23 0				
A	47	0	CUTS1B23 6				
	48	0	KEY				
A	49	0	CUTS1A24 0				
A	50	0	CUTS1B24 6				

EL: 04 CONN. REMOTE CONTROL J04

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
R	01	0	S-REA-17 1				
R	02	0	S-REA-18 2				
R	03	0	S-REA-19 3				
R	04	0	S-REA-20 2				
R	05	0	S-REA-21 5				
R	06	0	S-REA-22 2				
R	07	0	S-REA-23 6				
R	08	0	S-REA-24 2				
R	09	0	S-REP-1 1				
R	10	0	S-REP-18 4				
R	11	0	S-REP-19 3				

GR: 75 (CONTINUATION)
 VU PANEL CH17-24

EL: 04 (CONTINUATION)

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
		63	0				
		64	0				
		65	0				
		66	0				
		67	0				
		68	0				
		69	0				
R		71	0	S-REPM1R 2			
R		72	0	S-SYMM1R 3			
R		73	0	S-INM1R 1			
R		74	0	S-INM2R 6			
R		75	0	S-SYMM2R 9			
		76	0	KEY			
		77	0	KEY			
R		78	0	S-REPM2R 8			

EL: 05 CCNN. NCISE REDUCTION SYST. J05

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
B		01	0	B-BCY-17 1			
B		02	0	B-BDY-18 2			
B		03	0	B-BCY-19 3			
		04	0	KEY			
B		05	0	B-BDY-20 2			
B		06	0	B-BCY-21 5			
		07	0				
		08	0				
		09	0				
B		10	0	B-BCY-22 2			
B		11	0	B-BDY-23 6			
		12	0	KEY			
B		13	0	B-BCY-24 2			
B		14	0	+24.0 1			
B		15	0	0.0-DIGC 0			

GR: 76
 1.180.785.81/786.00 VU-METER UNIT CH01

EL: 01 CCNN. CONTRCL CH01 J01

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
F		01	0	S-REP-01 1			
F		02	0	S-REP-01 1			
F		03	0	B-SYN-01 1			
F		04	0	B-SYN-01 1			
F		05	0	B-REA-01 1			
F		06	0	B-REA-01 1			
F		07	0	+ 5.0 -A 3			
F		08	0	+ 5.0 -A 3			
F		09	0	S-IN -01 1			
F		10	0	S-IN -01 1			
F		11	0	S-INDCTL 5			
F		12	0	S-INDCTL 5			
F		13	0	S-LCCIN 0			
F		14	0	S-LCCIN 0			
F		15	0	S-REA-01 1			
F		16	0	S-REA-01 1			
F		17	0	B-RCD-01 1			
F		18	0	B-RCD-01 1			
F		19	0	B-BDY-01 1			
		20	0				
F		21	0	ACB12 -A 8			
F		22	0	ACB12 -A 8			
F		23	0	ACA12 -A 9			
F		24	0	ACA12 -A 9			

EL: 02 ATTENUATOR BOARD CH01

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
V		01	0	GND			9
V		02	0	INA		-01	0
V		03	0	INB		-01	6
V		04	0	GND			9
V		05	0	GND			9
V		06	0	INSA -01 6			
V		07	0	INSA -01 6			
V		08	0	INSA -01 0			
V		09	0	INSA -01 0			

EL: 03 TRANSF. CONN. BOARD CUT1 CH01

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
V		01	0	GND			9
V		02	0	CUT1A-01 0			
V		03	0	CUT1B-01 6			
V		04	0	GND			9
V		05	0	GND			9
V		06	0	OUTS1B01 6			
V		07	0	CUTS1B01 6			
V		08	0	CUTS1A01 0			

GR: 76 (CONTINUATION)
 1.180.785.81/786.00 VU-METER UNIT CH01

EL: 03 (CONTINUATION)

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
V		09	0	CUTS1A01 0			

EL: 04 TRANSF. CCNN. BOARD CUT2 CH01

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
V		01	0	GND			9
V		02	0	CUT2A-C1 0			
V		03	0	CUT2E-01 6			
V		04	0	GND			9
V		05	0	GND			9
V		06	0	CUTS2B01 6			
V		07	0	CUTS2B01 6			
V		08	0	CUTS2A01 0			
V		09	0	CUTS2A01 0			

EL: 05 CONNECTION BOARD OUT1 CH01 J101

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
		01	0	CUTS1B01			
		02	0	CUTS1A01			
		03	0				
		04	0	-15.0 -A			
		05	0				
		06	0	+15.0 -A			
		07	0				
		08	0	CUT1B-01			
		09	0	CUT1B-01			
		10	0	CUT1A-01			

EL: 06 CONNECTION BOARD CUT2 CH01 J201

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
		01	0	CUTS2B01			
		02	0	CUTS2A01			
		03	0				
		04	0	-15.0 -A			
		05	0				
		06	0	+15.0 -A			
		07	0				
		08	0	CUT2B-01			
		09	0	CUT2B-01			
		10	0	CUT2A-01			

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GR: 76 (CONTINUATION)
 1.180.785.81/786.00 VU-METER UNIT CH01

EL: 07 CCNN. B. SUPPLY FIELD CH01

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
U		01	0	GND			0
U		02	0	-15.0 -A 6			
U		03	0	+15.0 -A 2			

GR: 77
 1.180.785.81/786.00 VU-METER UNIT CH02

EL: 01 CCNN. CONTROL CH02 J01

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
F		01	0	S-REP-02 4			
F		02	0	S-REP-02 4			
F		03	0	B-SYN-02 9			
F		04	0	B-SYN-02 9			
F		05	0	B-REA-02 0			
F		06	0	B-REA-02 0			
F		07	0	+ 5.0 -A 3			
F		08	0	+ 5.0 -A 3			
F		09	0	S-IN -02 9			
F		10	0	S-IN -02 9			
F		11	0	S-INDCTL 5			
F		12	0	S-INDCTL 5			
F		13	0	S-LCCIN 0			
F		14	0	S-LCCIN 0			
F		15	0	S-REA-02 0			
F		16	0	S-REA-02 0			
F		17	0	B-RCD-02 2			
F		18	0	B-RCD-02 2			
F		19	0	B-BDY-02 2			
		20	0				
F		21	0	ACB12 -A 8			
F		22	0	ACB12 -A 8			
F		23	0	ACA12 -A 9			
F		24	0	ACA12 -A 9			

EL: 02 ATTENUATOR BOARD CH02

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
V		01	0	GND			9
V		02	0	INA		-02	0
V		03	0	INB		-02	6
V		04	0	GND			9
V		05	0	GND			9
V		06	0	INSA -02 6			
V		07	0	INSA -02 6			
V		08	0	INSA -02 0			
V		09	0	INSA -02 0			

EL: 03 TRANSF. CONN. BOARD OUT1 CH02

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
V		01	0	GND			9
V		02	0	CUT1A-02 0			
V		03	0	CUT1B-02 6			
V		04	0	GND			9
V		05	0	GND			9
V		06	0	CUTS1B02 6			
V		07	0	CUTS1B02 6			
V		08	0	CUTS1A02 0			
V		09	0	CUTS1A02 0			

GR: 77 (CONTINUATION)
 1.180.785.81/786.00 VU-METER UNIT CH02

EL: 03 (CONTINUATION)

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
V		09	0	CUTS1A02 0			

EL: 04 TRANSF. CCNN. BOARD CUT2 CH02

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
V		01	0	GND			9
V		02	0	CUT2A-02 0			
V		03	0	CUT2E-02 6			
V		04	0	GND			9
V		05	0	GND			9
V		06	0	CUTS2B02 6			
V		07	0	CUTS2B02 6			
V		08	0	CUTS2A02 0			
V		09	0	CUTS2A02 0			

EL: 05 CONNECTION BOARD OUT1 CH02 J101

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
		01	0	CUTS1B02			
		02	0	CUTS1A02			
		03	0				
		04	0	-15.0 -A			
		05	0				
		06	0	+15.0 -A			
		07	0				
		08	0	CUT1B-02			
		09	0	CUT1B-02			
		10	0	CUT1A-02			

EL: 06 CONNECTION BOARD OUT2 CH02 J201

TYPE	PT	LV	SIG.NAME	COLOR	F	X	Y
		01	0	CUTS2B02			
		02	0	CUTS2A02			
		03	0				
		04	0	-15.0 -A			
		05	0				
		06	0	+15.0 -A			
		07	0				
		08	0	CUT2B-02			
		09	0	CUT2B-02			
		10	0	CUT2A-02			

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GR: 77 (CONTINUATION)
 1.180.785.81/786.00 VU-METER UNIT CH02

EL: 07 CONN. B. SUPPLY FIELD CH02
 TYPE PT LV SIG.NAME COLOR F X Y
 U 01 0 GND 0
 U 02 0 -15.0 -A 6
 U 03 0 +15.0 -A 2

GR: 78
 1.180.785.81/786.00 VU-METER UNIT CH03

EL: 01 CONN. CONTROL CH03 J01
 TYPE PT LV SIG.NAME COLOR F X Y
 F 01 0 S-REP-03 3
 F 02 0 S-REP-03 3
 F 03 0 B-SYN-03 3
 F 04 0 B-SYN-03 3
 F 05 0 B-REA-03 3
 F 06 0 B-REA-03 3
 F 07 0 + 5.0 -A 3
 F 08 0 + 5.0 -A 3
 F 09 0 S-IN -03 3
 F 10 0 S-IN -03 3
 F 11 0 S-INDCTL 5
 F 12 0 S-INDCTL 5
 F 13 0 S-LCCIN 0
 F 14 0 S-LCCIN 0
 F 15 0 S-REA-03 3
 F 16 0 S-REA-03 3
 F 17 0 B-RCD-03 3
 F 18 0 B-RCD-03 3
 F 19 0 B-BDY-03 3
 F 20 0
 F 21 0 ACB12 -A 8
 F 22 0 ACB12 -A 8
 F 23 0 ACA12 -A 9
 F 24 0 ACA12 -A 9

EL: 02 ATTENUATOR BCARD CH03
 TYPE PT LV SIG.NAME COLOR F X Y
 V 01 0 GND 9
 V 02 0 INA -03 0
 V 03 0 INB -03 6
 V 04 0 GND 9
 V 05 0 GND 9
 V 06 0 INSB -03 6
 V 07 0 INSB -03 6
 V 08 0 INSA -03 0
 V 09 0 INSA -03 0

EL: 03 TRANSF. CONN. BOARD CUT1 CH03
 TYPE PT LV SIG.NAME COLOR F X Y
 V 01 0 GND 9
 V 02 0 CUT1A-03 0
 V 03 0 OUT1B-03 6
 V 04 0 GND 9
 V 05 0 GND 9
 V 06 0 OUTS1B03 6
 V 07 0 CUTS1B03 6
 V 08 0 CUTS1A03 0

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GR: 78 (CONTINUATION)
 1.180.785.81/786.00 VU-METER UNIT CH03

EL: 03 (CONTINUATION)
 TYPE PT LV SIG.NAME COLOR F X Y
 V 09 0 OUTS1A03 0

EL: 04 TRANSF. CONN. BOARD CUT2 CH03
 TYPE PT LV SIG.NAME COLOR F X Y
 V 01 0 GND 9
 V 02 0 OUT2A-03 0
 V 03 0 OUT2B-03 6
 V 04 0 GND 9
 V 05 0 GND 9
 V 06 0 OUTS2B03 6
 V 07 0 OUTS2B03 6
 V 08 0 OUTS2A03 0
 V 09 0 OUTS2A03 0

EL: 05 CONNECTION BOARD OUT1 CH03 J101
 TYPE PT LV SIG.NAME COLOR F X Y
 01 0 CUTS1B03
 02 0 OUTS1A03
 03 0
 04 0 -15.0 -A
 05 0
 06 0 +15.0 -A
 07 0
 08 0 OUT1B-03
 09 0 OUT1B-03
 10 0 OUT1A-03

EL: 06 CONNECTION BOARD OUT2 CH03 J201
 TYPE PT LV SIG.NAME COLOR F X Y
 01 0 CUTS2B03
 02 0 OUTS2A03
 03 0
 04 0 -15.0 -A
 05 0
 06 0 +15.0 -A
 07 0
 08 0 OUT2B-03
 09 0 OUT2B-03
 10 0 OUT2A-03

GR: 78 (CONTINUATION)
 1.180.785.81/786.00 VU-METER UNIT CH03

EL: 07 CONN. B. SUPPLY FIELD CH03
 TYPE PT LV SIG.NAME COLOR F X Y
 U 01 0 GND 0
 U 02 0 -15.0 -A 6
 U 03 0 +15.0 -A 2

GR: 79
 1.180.785.81/786.00 VU-METER UNIT CH04

EL: 01 CONN. CONTROL CH04 J01
 TYPE PT LV SIG.NAME COLOR F X Y
 F 01 0 S-REP-04 4
 F 02 0 S-REP-04 4
 F 03 0 B-SYN-04 9
 F 04 0 B-SYN-04 9
 F 05 0 B-REA-04 2
 F 06 0 B-REA-04 2
 F 07 0 + 5.0 -A 3
 F 08 0 + 5.0 -A 3
 F 09 0 S-IN -04 9
 F 10 0 S-IN -04 9
 F 11 0 S-INDCTL 5
 F 12 0 S-INDCTL 5
 F 13 0 S-LCCIN 0
 F 14 0 S-LCCIN 0
 F 15 0 S-REA-04 2
 F 16 0 S-REA-04 2
 F 17 0 B-RCD-04 2
 F 18 0 B-RCD-04 2
 F 19 0 B-BDY-04 2
 F 20 0
 F 21 0 ACB12 -A 8
 F 22 0 ACB12 -A 8
 F 23 0 ACA12 -A 9
 F 24 0 ACA12 -A 9

EL: 02 ATTENUATOR BCARD CH04
 TYPE PT LV SIG.NAME COLOR F X Y
 V 01 0 GND 9
 V 02 0 INA -04 0
 V 03 0 INB -04 6
 V 04 0 GND 9
 V 05 0 GND 9
 V 06 0 INSB -04 6
 V 07 0 INSB -04 6
 V 08 0 INSA -04 0
 V 09 0 INSA -04 0

EL: 03 TRANSF. CONN. BOARD OUT1 CH04
 TYPE PT LV SIG.NAME COLOR F X Y
 V 01 0 GND 9
 V 02 0 OUT1A-04 0
 V 03 0 OUT1B-04 6
 V 04 0 GND 9
 V 05 0 GND 9
 V 06 0 OUTS1B04 6
 V 07 0 CUTS1B04 6
 V 08 0 OUTS1A04 0

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GR: 79 (CONTINUATION)
 1.180.785.81/786.00 VU-METER UNIT CH04

EL: 03 (CONTINUATION)
 TYPE PT LV SIG.NAME COLOR F X Y
 V 09 0 OUTS1A04 0

EL: 04 TRANSF. CONN. BOARD OUT2 CH04
 TYPE PT LV SIG.NAME COLOR F X Y
 V 01 0 GND 9
 V 02 0 OUT2A-04 0
 V 03 0 OUT2B-04 6
 V 04 0 GND 9
 V 05 0 GND 9
 V 06 0 OUTS2B04 6
 V 07 0 OUTS2B04 6
 V 08 0 OUTS2A04 0
 V 09 0 OUTS2A04 0

EL: 05 CONNECTION BOARD OUT1 CH04 J101
 TYPE PT LV SIG.NAME COLOR F X Y
 01 0 CUTS1B04
 02 0 OUTS1A04
 03 0
 04 0 -15.0 -A
 05 0
 06 0 +15.0 -A
 07 0
 08 0 OUT1B-04
 09 0 OUT1B-04
 10 0 OUT1A-04

EL: 06 CONNECTION BOARD OUT2 CH04 J201
 TYPE PT LV SIG.NAME COLOR F X Y
 01 0 CUTS2B04
 02 0 OUTS2A04
 03 0
 04 0 -15.0 -A
 05 0
 06 0 +15.0 -A
 07 0
 08 0 OUT2B-04
 09 0 OUT2B-04
 10 0 OUT2A-04

GR: 79 (CONTINUATION)
 1.180.785.81/786.00 VU-METER UNIT CH04

EL: 07 CONN. B. SUPPLY FIELD CH04
 TYPE PT LV SIG.NAME COLOR F X Y
 U 01 0 GND 0
 U 02 0 -15.0 -A 6
 U 03 0 +15.0 -A 2

GR: 80
 1.180.785.81/786.00 VU-METER UNIT CH05

EL: 01 CONN. CONTROL CH05 J01
 TYPE PT LV SIG.NAME COLOR F X Y
 F 01 0 S-REP-05 5
 F 02 0 S-REP-05 5
 F 03 0 B-SYN-05 5
 F 04 0 B-SYN-05 5
 F 05 0 B-REA-05 5
 F 06 0 B-REA-05 5
 F 07 0 + 5.0 -A 3
 F 08 0 + 5.0 -A 3
 F 09 0 S-IN -05 5
 F 10 0 S-IN -05 5
 F 11 0 S-INDCTL 5
 F 12 0 S-INDCTL 5
 F 13 0 S-LCCIN 0
 F 14 0 S-LOCIN 0
 F 15 0 S-REA-05 5
 F 16 0 S-REA-05 5
 F 17 0 B-RCD-05 5
 F 18 0 B-RCD-05 5
 F 19 0 B-BDY-05 5
 F 20 0
 F 21 0 ACB12 -A 8
 F 22 0 ACB12 -A 8
 F 23 0 ACA12 -A 9
 F 24 0 ACA12 -A 9

EL: 02 ATTENUATOR BOARD CH05
 TYPE PT LV SIG.NAME COLOR F X Y
 V 01 0 GND 9
 V 02 0 INA -05 0
 V 03 0 INB -05 6
 V 04 0 GND 9
 V 05 0 GND 9
 V 06 0 INSB -05 6
 V 07 0 INSB -05 6
 V 08 0 INSA -05 0
 V 09 0 INSA -05 0

EL: 03 TRANSF. CONN. BOARD CUT1 CH05
 TYPE PT LV SIG.NAME COLOR F X Y
 V 01 0 GND 9
 V 02 0 OUT1A-C5 6
 V 03 0 CUT1B-05 6
 V 04 0 GND 9
 V 05 0 GND 9
 V 06 0 CUTS1B05 6
 V 07 0 CUTS1B05 6
 V 08 0 OUTS1A05 0

GR: 80 (CONTINUATION)
 1.180.785.81/786.00 VU-METER UNIT CH05

EL: 03 (CONTINUATION)
 TYPE PT LV SIG.NAME COLOR F X Y
 V 09 0 OUTS1A05 0

EL: 04 TRANSF. CONN. BOARD OUT2 CH05
 TYPE PT LV SIG.NAME COLOR F X Y
 V 01 0 GND 9
 V 02 0 OUT2A-05 0
 V 03 0 OUT2B-C5 6
 V 04 0 GND 9
 V 05 0 GND 9
 V 06 0 OUTS2B05 6
 V 07 0 OUTS2B05 6
 V 08 0 CUTS2A05 0
 V 09 0 OUTS2A05 0

EL: 05 CONNECTION BOARD CUT1 CH05 J101
 TYPE PT LV SIG.NAME COLOR F X Y
 01 0 CUTS1B05
 02 0 OUTS1A05
 03 0
 04 0 -15.0 -A
 05 0
 06 0 +15.0 -A
 07 0
 08 0 OUT1B-C5
 09 0 OUT1B-05
 10 0 CUT1A-05

EL: 06 CONNECTION BOARD OUT2 CH05 J201
 TYPE PT LV SIG.NAME COLOR F X Y
 01 0 OUTS2B05
 02 0 OUTS2A05
 03 0
 04 0 -15.0 -A
 05 0
 06 0 +15.0 -A
 07 0
 08 0 OUT2B-05
 09 0 OUT2B-05
 10 0 CUT2A-05

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GR: 80 (CONTINUATION)
 1.180.785.81/786.00 VU-METER UNIT CH05

EL: 07 CONN. B. SUPPLY FIELD CH05
 TYPE PT LV SIG.NAME COLOR F X Y
 U 01 0 GND 0
 U 02 0 -15.0 -A 6
 U 03 0 +15.0 -A 2

GR: 81
 1.180.785.81/786.00 VU-METER UNIT CH06

EL: 01 CONN. CONTROL CH06 J01
 TYPE PT LV SIG.NAME COLOR F X Y
 F 01 0 S-REP-06 4
 F 02 0 S-REP-06 4
 F 03 0 B-SYN-06 9
 F 04 0 B-SYN-06 9
 F 05 0 B-REA-06 0
 F 06 0 B-REA-06 0
 F 07 0 + 5.0 -A 3
 F 08 0 + 5.0 -A 3
 F 09 0 S-IN -06 9
 F 10 0 S-IN -06 9
 F 11 0 S-INDCTL 5
 F 12 0 S-INDCTL 5
 F 13 0 S-LCCIN 0
 F 14 0 S-LOCIN 0
 F 15 0 S-REA-06 2
 F 16 0 S-REA-06 2
 F 17 0 B-RCD-06 2
 F 18 0 B-RCD-06 2
 F 19 0 B-BDY-06 2
 F 20 0
 F 21 0 ACB12 -A 8
 F 22 0 ACB12 -A 8
 F 23 0 ACA12 -A 9
 F 24 0 ACA12 -A 9

EL: 02 ATTENUATOR BOARD CH06
 TYPE PT LV SIG.NAME COLOR F X Y
 V 01 0 GND 9
 V 02 0 INA -06 0
 V 03 0 INB -06 6
 V 04 0 GND 9
 V 05 0 GND 9
 V 06 0 INSB -06 6
 V 07 0 INSB -06 6
 V 08 0 INSA -06 0
 V 09 0 INSA -06 0

EL: 03 TRANSF. CONN. BOARD OUT1 CH06
 TYPE PT LV SIG.NAME COLOR F X Y
 V 01 0 GND 9
 V 02 0 OUT1A-C6 0
 V 03 0 CUT1B-06 6
 V 04 0 GND 9
 V 05 0 GND 9
 V 06 0 OUTS1B06 6
 V 07 0 CUTS1B06 6
 V 08 0 OUTS1A06 0

GR: 81 (CONTINUATION)
 1.180.785.81/786.00 VU-METER UNIT CH06

EL: 03 (CONTINUATION)
 TYPE PT LV SIG.NAME COLOR F X Y
 V 09 0 CUTS1A06 0

EL: 04 TRANSF. CONN. BOARD OUT2 CH06
 TYPE PT LV SIG.NAME COLOR F X Y
 V 01 0 GND 9
 V 02 0 CUT2A-06 0
 V 03 0 OUT2B-06 6
 V 04 0 GND 9
 V 05 0 GND 9
 V 06 0 OUTS2B06 6
 V 07 0 OUTS2B06 6
 V 08 0 CUTS2A06 0
 V 09 0 OUTS2A06 0

EL: 05 CONNECTION BOARD OUT1 CH06 J101
 TYPE PT LV SIG.NAME COLOR F X Y
 01 0 OUTS1B06
 02 0 OUTS1A06
 03 0
 04 0 -15.0 -A
 05 0
 06 0 +15.0 -A
 07 0
 08 0 OUT1B-06
 09 0 OUT1B-06
 10 0 CUT1A-06

EL: 06 CONNECTION BOARD OUT2 CH06 J201
 TYPE PT LV SIG.NAME COLOR F X Y
 01 0 OUTS2B06
 02 0 OUTS2A06
 03 0
 04 0 -15.0 -A
 05 0
 06 0 +15.0 -A
 07 0
 08 0 OUT2B-06
 09 0 OUT2B-06
 10 0 CUT2A-06

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GR: 81 (CONTINUATION)
1.180.785.81/786.00 VU-METER UNIT CH06

EL: 07 CONN. B. SUPPLY FIELD CH06

TYPE PT LV SIG.NAME COLOR F X Y

U 01 0 GND 0
U 02 0 -15.0 -A 6
U 03 0 +15.0 -A 2

GR: 82
1.180.785.81/786.00 VU-METER UNIT CH07

EL: 01 CONN. CNTRL CH07 J01

TYPE PT LV SIG.NAME COLOR F X Y

F 01 0 S-REP-07 6
F 02 0 S-REP-07 6
F 03 0 B-SYN-07 6
F 04 0 B-SYN-07 6
F 05 0 B-REA-07 6
F 06 0 B-REA-07 6
F 07 0 + 5.0 -A 3
F 08 0 + 5.0 -A 3
F 09 0 S-IN -07 6
F 10 0 S-IN -07 6
F 11 0 S-INDCTL 5
F 12 0 S-INDCTL 5
F 13 0 S-LCCIN 0
F 14 0 S-LCCIN 0
F 15 0 S-REA-07 6
F 16 0 S-REA-07 6
F 17 0 B-RCD-07 6
F 18 0 B-RCD-07 6
F 19 0 B-BDY-07 6
F 20 0
F 21 0 ACB12 -A 8
F 22 0 ACB12 -A 8
F 23 0 ACA12 -A 9
F 24 0 ACA12 -A 9

EL: 02 ATTENUATOR BOARD CH07

TYPE PT LV SIG.NAME COLOR F X Y

V 01 0 GND 9
V 02 0 IAA -07 0
V 03 0 INB -07 6
V 04 0 GND 9
V 05 0 GND 9
V 06 0 INSB -07 6
V 07 0 INSB -07 6
V 08 0 INSA -07 0
V 09 0 INSA -07 0

EL: 03 TRANSF. CONN. BOARD CUT1 CH07

TYPE PT LV SIG.NAME COLOR F X Y

V 01 0 GND 9
V 02 0 CUT1A-07 0
V 03 0 CUT1B-07 6
V 04 0 GND 9
V 05 0 GND 9
V 06 0 CUTS1B07 6
V 07 0 CUTS1B07 6
V 08 0 CUTS1A07 0

GR: 82 (CONTINUATION)
1.180.785.81/786.00 VU-METER UNIT CH07

EL: 03 (CONTINUATION)

TYPE PT LV SIG.NAME COLOR F X Y

V 09 0 CUTS1A07 0

EL: 04 TRANSF. CONN. BOARD OUT2 CH07

TYPE PT LV SIG.NAME COLOR F X Y

V 01 0 GND 9
V 02 0 OUT2A-07 0
V 03 0 OUT2B-07 6
V 04 0 GND 9
V 05 0 GND 9
V 06 0 CUTS2B07 6
V 07 0 CUTS2B07 6
V 08 0 CUTS2A07 0
V 09 0 CUTS2A07 0

EL: 05 CONNECTION BOARD OUT1 CH07 J101

TYPE PT LV SIG.NAME COLOR F X Y

C1 0 CUTS1B07
C2 0 CUTS1A07
C3 0
C4 0 -15.C -A
C5 0
C6 0 +15.0 -A
C7 0
C8 0 OUT1B-07
C9 0 CUT1E-07
C10 0 CUT1A-07

EL: 06 CONNECTION BOARD OUT2 CH07 J201

TYPE PT LV SIG.NAME COLOR F X Y

C1 0 CUTS2B07
C2 0 CUTS2A07
C3 0
C4 0 -15.C -A
C5 0
C6 0 +15.C -A
C7 0
C8 0 CUT2B-07
C9 0 CUT2E-07
C10 0 OUT2A-07

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GR: 82 (CONTINUATION)
1.180.785.81/786.00 VU-METER UNIT CH07

EL: 07 CONN. B. SUPPLY FIELD CH07

TYPE PT LV SIG.NAME COLOR F X Y

U 01 0 GND 0
U 02 0 -15.0 -A 6
U 03 0 +15.0 -A 2

GR: 83
1.180.785.81/786.00 VU-METER UNIT CH08

EL: 01 CONN. CNTRL CH08 J01

TYPE PT LV SIG.NAME COLOR F X Y

F 01 0 S-REP-08 4
F 02 0 S-REP-08 4
F 03 0 B-SYN-08 9
F 04 0 B-SYN-08 9
F 05 0 B-REA-08 0
F 06 0 B-REA-08 0
F 07 0 + 5.0 -A 3
F 08 0 + 5.0 -A 3
F 09 0 S-IA -08 9
F 10 0 S-IN -08 9
F 11 0 S-INDCTL 5
F 12 0 S-INDCTL 5
F 13 0 S-LCCIN 0
F 14 0 S-LCCIN 0
F 15 0 S-REA-08 2
F 16 0 S-REA-08 2
F 17 0 B-RCD-08 2
F 18 0 B-RCD-08 2
F 19 0 B-BDY-08 2
F 20 0
F 21 0 ACB12 -A 8
F 22 0 ACB12 -A 8
F 23 0 ACA12 -A 9
F 24 0 ACA12 -A 9

EL: 02 ATTENUATOR BOARD CH08

TYPE PT LV SIG.NAME COLOR F X Y

V 01 0 GND 9
V 02 0 IAA -08 0
V 03 0 INB -08 6
V 04 0 GND 9
V 05 0 GND 9
V 06 0 INSB -08 6
V 07 0 INSB -08 6
V 08 0 INSA -08 0
V 09 0 INSA -08 0

EL: 03 TRANSF. CONN. BOARD CUT1 CH08

TYPE PT LV SIG.NAME COLOR F X Y

V 01 0 GND 9
V 02 0 CUT1A-08 0
V 03 0 CUT1B-08 6
V 04 0 GND 9
V 05 0 GND 9
V 06 0 CUTS1B08 6
V 07 0 CUTS1B08 6
V 08 0 CUTS1A08 0

GR: 83 (CONTINUATION)
1.180.785.81/786.00 VU-METER UNIT CH08

EL: 03 (CONTINUATION)

TYPE PT LV SIG.NAME COLOR F X Y

V 09 0 CUTS1A08 0

EL: 04 TRANSF. CONN. BOARD OUT2 CH08

TYPE PT LV SIG.NAME COLOR F X Y

V 01 0 GND 9
V 02 0 OUT2A-08 0
V 03 0 OUT2B-08 6
V 04 0 GND 9
V 05 0 GND 9
V 06 0 CUTS2B08 6
V 07 0 CUTS2B08 6
V 08 0 CUTS2A08 0
V 09 0 CUTS2A08 0

EL: 05 CONNECTION BOARD CUT1 CH08 J101

TYPE PT LV SIG.NAME COLOR F X Y

C1 0 CUTS1B08
C2 0 CUTS1A08
C3 0
C4 0 -15.C -A
C5 0
C6 0 +15.0 -A
C7 0
C8 0 OUT1B-08
C9 0 CUT1E-08
C10 0 CUT1A-08

EL: 06 CONNECTION BOARD OUT2 CH08 J201

TYPE PT LV SIG.NAME COLOR F X Y

C1 0 CUTS2B08
C2 0 CUTS2A08
C3 0
C4 0 -15.C -A
C5 0
C6 0 +15.0 -A
C7 0
C8 0 OUT2B-08
C9 0 OUT2E-08
C10 0 OUT2A-08

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GR: 83 (CONTINUATION)
 1.180.785.81/786.00 VU-METER UNIT CH08

EL: 07 CONN. B. SUPPLY FIELD CH08
 TYPE PT LV SIG.NAME COLOR F X Y
 U 01 0 GNE 0
 U 02 0 -15.0 -A 6
 U 03 0 +15.0 -A 2

GR: 90 1.180.710.00
 REPRODUCE AMPLIFIER

EL: 01 REPRCDUCE AMP. CH XY P01
 TYPE PT LV SIG.NAME COLOR F X Y
 02B 0 AN-REPLY
 03A 0 AN-SYNXY
 04B 0 AN-IN1XY
 05A 0 GND
 07A 0 AN-SAMXY
 08B 0 AN-PAMXY
 09A 0 O-PAM-XY
 12B 0 S-CALIB
 13A 0 S-GAIN
 14B 0 -15.0 -Z
 15A 0 0.0 -Z
 16B 0 +15.0 -Z
 17A 0 OUT1A-XY
 18B 0 OUT1B-XY
 19A 0 0.0-DIGZ
 20B 0 Y-REC1XY
 21A 0 S-REP-XY
 22B 0 S-INM1
 23A 0 S-SYNM1
 24B 0 S-REPM1
 25A 0 Y-MUTE
 26B 0 S-IN -XY
 27A 0 B-SYN-XY
 28B 0 Y-SPEEXY
 29A 0 Y-LCW
 30B 0 S-CCIR
 31A 0 S-NAB
 32B 0 + 5.0 -Z

GR: 91 1.18C.711.00
 SYNC. AMPLIFIER

EL: 01 SYNC. AMP. CHXY P01
 TYPE PT LV SIG.NAME COLOR F X Y
 02B 0 AN-REFXY
 03A 0 AN-SYNXY
 04B 0 AN-IN2XY
 05A 0 GND
 07A 0 AN-SAMXY
 08B 0 AN-PAMXY
 09A 0 O-PAM-XY
 10B 0 Y-RECLXY
 11A 0 Y-RECLXY
 12B 0 S-CALIB
 13A 0 S-GAIN
 14B 0 -15.0 -Z
 15A 0 0.0 -Z
 16B 0 +15.0 -Z
 17A 0 OUT2A-XY
 18B 0 OUT2B-XY
 19A 0 0.0-DIGZ
 20B 0 Y-REC1XY
 21A 0 S-REP-XY
 22B 0 S-INM2
 23A 0 S-SYNM2
 24B 0 S-REPM2
 25A 0 Y-MUTE
 26B 0 S-REPXY
 27A 0 B-SYN-XY
 28B 0 Y-SPEEXY
 29A 0 Y-LCW
 30B 0 S-CCIR
 31A 0 S-NAB
 32B 0 + 5.0 -Z

GR: 92 1.180.712.00
 RECORD AMPLIFIER

EL: 01 RECORD AMP. CH XY P01
 TYPE PT LV SIG.NAME COLOR F X Y
 03A 0 AN-IN1XY
 04B 0 AN-IN2XY
 05A 0 GND
 06B 0 ANRECLXY
 07A 0 ANRECHXY
 09A 0 Y-BIAHXY
 10B 0 Y-BIALXY
 11A 0 Y-RECLXY
 12B 0 Y-RECHXY
 14B 0 -15.0 -Z
 15A 0 0.0 -Z
 16B 0 +15.0 -Z
 17A 0 INA -XY
 18B 0 INB -XY
 19A 0 0.0-DIGZ
 20B 0 Y-RECDXY
 25A 0 Y-MUTE
 26B 0 K-REC-XY
 27A 0 Y-RCURXY
 28B 0 Y-SPEEXY
 29A 0 Y-LCW
 30B 0 S-CCIR
 31A 0 S-NAB
 32B 0 + 5.0 -Z

GR: 93 1.180.713.00
 HF DRIVER

EL: 01 HF DRIVER CH. XY P01
 TYPE PT LV SIG.NAME COLOR F X Y
 01A 0 YAC-ERAS
 02B 0 0-ERAS
 03A 0 YAC-BIAS
 04B 0 0-BIAS
 05A 0 GND
 06B 0 YERAHXY
 07A 0 YERAHXY
 08B 0 Y-BIAHXY
 09A 0 Y-BIALXY
 14B 0 -15.0 -Z
 15A 0 0.0 -Z
 16B 0 +15.0 -Z
 17A 0 Y-REC
 18B 0 YPS-REC
 19A 0 0.0-DIGZ
 20B 0 Y-RECDXY
 21A 0 Y-RECEXY
 22B 0 Y-RECBXY
 23A 0 B-REA-XY
 24B 0 B-RCD-XY
 25A 0 Y-MUTE
 26B 0 S-REA-XY
 27A 0 K-REC-XY
 28B 0 Y-RCURXY
 29A 0 Y-LCW
 30B 0 S-CCIR
 31A 0 S-NAB
 32B 0 + 5.0 -Z

GR: 94 1.18C.714.00
 MASTER OSCILLATOR

EL: 01 MASTER OSCILLATOR P01
 TYPE PT LV SIG.NAME COLOR F X Y
 01A 0 YAC-ERAS
 03A 0 0-ERAS
 05A 0 YAC-BIAS
 07A 0 0-BIAS
 14B 0 -15.0 -A
 15A 0 0.0 -A
 16B 0 +15.0 -A
 19A 0 0.0-DIGA
 20B 0 +24.0
 25A 0 S-HEAD16
 29A 0 Y-LCW
 32A 0 + 5.0 -A

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 TAPE RECORDER ***STUDER A800*** AUDIO SECTION 8C/01/15

SECTION 6/96

GR: 95 1.180.661.00
 REPRODUCE PREAMPLIFIER

EL: 01 REPROD. PREAMP. CH X1 TO X8 P01

TYPE	PT	LV	SIG.	NAME	COLOR	F	X	Y
02B	0		0-	PAM-X8				
03A	0		AN-	PAMX8				
03C	0		ANREPL	X8				
04B	0		ANREPHX8					
05A	0		AN-	PAMX7				
05C	0		0-	PAM-X7				
06B	0		ANREPLX7					
07A	0		AN-	PAMX6				
07C	0		ANREPHX7					
08B	0		0-	PAM-X6				
09A	0		ANREPHX6					
09C	0		ANREPLX6					
10B	0		0-	PAM-X5				
11A	0		AN-	PAMX5				
11C	0		ANREPLX5					
12B	0		ANREPHX5					
14B	0		-15.0	-Z				
15A	0		GND					
15C	0		GND					
16B	0		+15.0	-Z				
22B	0		0-	PAM-X4				
23A	0		AN-	PAMX4				
23C	0		ANREPLX4					
24B	0		ANREPHX4					
25A	0		AN-	PAMX3				
25C	0		0-	PAM-X3				
26B	0		ANREPLX3					
27A	0		AN-	PAMX2				
27C	0		ANREPHX3					
28B	0		0-	PAM-X2				
29A	0		ANREPHX2					
29C	0		ANREPLX2					
30B	0		0-	PAM-X1				
31A	0		AN-	PAMX1				
31C	0		ANREPLX1					
32B	0		ANREPHX1					

 * STUDER * L O C A T I O N S U M M A R Y * 83/03/23 * 11:21 * PAGE 40 *

 TAPE RECORDER ***STUDER A800*** AUDIO SECTION 8C/01/15

GR #	USED PINS	UNUSED PINS	TOTAL PINS	COD. KEYS	ELE-MNTS	DESCRIPTION OF GROUP	PART # OF GR
52	287	109	396	0	12	PREAMPLIFIER UNIT	1.180.653.00
53	83	25	108	0	5	BASIS UNIT CH01-02	1.180.701.00
54	83	25	108	0	5	BASIS UNIT CH03-C4	1.180.701.00
55	83	25	108	0	5	BASIS UNIT CH05-C6	1.180.701.00
56	88	20	108	0	5	BASIS UNIT CH07-08	1.180.701.00
57	83	25	108	0	5	BASIS UNIT CH09-10	1.180.701.00
58	83	25	108	0	5	BASIS UNIT CH11-12	1.180.701.00
59	83	25	108	0	5	BASIS UNIT CH13-14	1.180.701.00
60	85	23	108	0	5	BASIS UNIT CH15-16	1.180.701.00
61	83	25	108	0	5	BASIS UNIT CH17-18	1.180.701.00
62	83	25	108	0	5	BASIS UNIT CH19-20	1.180.701.00
63	83	25	108	0	5	BASIS UNIT CH21-22	1.180.701.00
64	85	23	108	0	5	BASIS UNIT CH23-24	1.180.701.00
69	93	27	120	0	5	JUNCTION BOX CH01-08	1.180.760.00
70	79	16	95	0	4	JUNCTION BOX CH09-16	1.180.761.00
71	79	16	95	0	4	JUNCTION BOX CH17-24	1.180.761.00
72	150	64	214	4	10	MASTER PANEL	1.180.775.00
73	302	31	333	10	29	VU PANEL CH01-08	1.180.775.00
74	222	39	261	10	5	VU PANEL CH09-16	1.180.775.00
75	222	39	261	10	5	VU PANEL CH17-24	1.180.775.00
76	67	7	74	0	7	1.180.785.81/786.00 VU-METER UNIT CH01	
77	67	7	74	0	7	1.180.785.81/786.00 VU-METER UNIT CH02	
78	67	7	74	0	7	1.180.785.81/786.00 VU-METER UNIT CH03	
79	67	7	74	0	7	1.180.785.81/786.00 VU-METER UNIT CH04	
80	67	7	74	0	7	1.180.785.81/786.00 VU-METER UNIT CH05	
81	67	7	74	0	7	1.180.785.81/786.00 VU-METER UNIT CH06	
82	67	7	74	0	7	1.180.785.81/786.00 VU-METER UNIT CH07	
83	67	7	74	0	7	1.180.785.81/786.00 VU-METER UNIT CH08	
90	28	0	28	0	1	REPRODUCE AMPLIFIER	1.180.710.00
91	30	0	30	0	1	SYNC. AMPLIFIER	1.180.711.00
92	24	0	24	0	1	RECORD AMPLIFIER	1.180.712.00
93	28	0	28	0	1	HF DRIVER	1.180.713.00
94	12	0	12	0	1	MASTER OSCILLATOR	1.180.714.00
95	36	0	36	0	1	REPRODUCE PREAMPLIFIER	1.180.661.00
TOT.	3133	688	3821	34	196	DISTRIBUTED IN 34 GROUPS	

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 TAPE RECORDER ***STUDER A800*** AUDIO SECTION 8C/C1/15

SIG.NAME	COLOR	TYPE	GR	EL	PT	S	DESCRIPTION OF ELEMENT		SIG.NAME	COLOR	TYPE	GR	EL	PT	S	DESCRIPTION OF ELEMENT		
+ 0.0	0	F	69	02	15		CONN. POWER SUPPLY	J02	(CCNT.)	3	F	60	04	02		CCNN. CH. FEED	J04	
	0	F	69	04	14		CONN. LOWER CH. LEVEL	J04		3	M	70	01	02		CCNN. VU-PANEL	J01	
	0	M	69	06	13		CONN. TAPE DECK	J06		3	F	70	02	02		CCNN. POWER SUPPLY	J02	
	0	F	70	02	15		CONN. POWER SUPPLY	J02		3	F	70	03	02		CCNN. CH. FEED	J03	
	0	F	70	04	14		CONN. LOWER CH. LEVEL	J04		3	R	74	01	54		CCNN. CONTROL BASIS UNITS	J01	
	0	F	71	02	15		CONN. POWER SUPPLY	J02		3	R	74	04	54		CCNN. REMOTE CONTROL	J04	
	0	F	71	04	14		CONN. LOWER CH. LEVEL	J04										
	9	B	72	02	22		CONN. TAPE DECK	J02	+ 5.0 -C	3	F	61	04	02		CCNN. CH. FEED	J04	
	9	V	72	03	02		MASTER BOARD 2			3	F	62	04	02		CCNN. CH. FEED	J04	
										3	F	63	04	02		CCNN. CH. FEED	J04	
+ 5 LED	8	V	72	03	11		MASTER BOARD 2			3	F	64	04	02		CCNN. CH. FEED	J04	
	8	V	72	07	05		TLS SWITCH BOARD			3	M	71	01	02		CCNN. VU-PANEL	J01	
	8	V	72	07	21		TLS SWITCH BOARD			3	F	71	02	02		CCNN. POWER SUPPLY	J02	
	8	V	72	07	22		TLS SWITCH BOARD			3	F	71	03	02		CCNN. CH. FEED	J03	
	8	A	72	09	19		CONNECTOR EXPANSION UNIT			3	R	75	01	54		CCNN. CONTROL BASIS UNITS	J01	
	8	A	72	09	36		CONNECTOR EXPANSION UNIT			3	R	75	04	54		CCNN. REMOTE CONTROL	J04	
+ 5.0 -A	3	F	53	04	02		CONN. CH. FEED	J04	+ 5.0 -Z			90	01	32B		REPRODUCE AMP. CH XY	P01	
	3	F	54	04	02		CONN. CH. FEED	J04				91	01	32B		SYNC. AMP. CHXY	P01	
	3	F	55	04	02		CONN. CH. FEED	J04				92	01	32B		RECORD AMP. CH XY	P01	
	3	F	56	04	02		CONN. CH. FEED	J04				93	01	32B		HF DRIVER CH. XY	P01	
	3	F	56	05	05		CONN. DELAY UNIT	J05										
	3	M	69	01	02		CONN. MASTER- VU-PANEL	J01	+15.0 -A	0	F	52	07	12		CCNN. REP. AMP. CHC1-C8	J07	
	3	F	69	02	02		CONN. POWER SUPPLY	J02			M	53	03	14		CCNN. HEAD SIGNALS	J03	
	3	F	69	03	02		CONN. CH. FEED	J03			2	F	53	04	20		CONN. CH. FEED	J04
	3	B	72	01	01		CONN. JUNCTION BOX	J01			M	54	03	14		CCNN. HEAD SIGNALS	J03	
	3	B	72	01	02		CONN. JUNCTION BOX	J01			2	F	54	04	20		CCNN. CH. FEED	J04
	3	V	72	03	21		MASTER BOARD 2				M	55	03	14		CCNN. HEAD SIGNALS	J03	
	3	V	72	05	06		MASTER BOARD, OUTPUT 1	J04			2	F	55	04	20		CCNN. CH. FEED	J04
	3	V	72	05	07		MASTER BOARD, OUTPUT 1	J04			0	M	56	03	14		CCNN. HEAD SIGNALS	J03
	3	V	72	05	08		MASTER BOARD, OUTPUT 2	J01			2	F	56	04	20		CCNN. CH. FEED	J04
	3	V	72	06	07		MASTER BOARD, OUTPUT 2	J01			2	F	69	01	20		CCNN. MASTER- VU-PANEL	J01
	3	V	72	06	08		MASTER BOARD, OUTPUT 2	J01			2	F	69	02	20		CCNN. POWER SUPPLY	J02
	3	R	73	01	54		CONN. CONTROL BASIS UNITS	J01			2	F	69	03	20		CCNN. CH. FEED	J03
	3	R	73	04	54		CONN. REMOTE CONTROL	J04			9	B	72	01	35		CCNN. JUNCTION BOX	J01
	3	F	76	01	07		CONN. CONTROL CH01	J01			2	B	72	01	36		CCNN. JUNCTION BOX	J01
	3	F	76	01	08		CONN. CONTROL CH01	J01			2	V	72	04	06		MASTER BOARD 3	
	3	F	77	01	07		CONN. CONTROL CH02	J01			2	V	72	10	04A			
	3	F	77	01	08		CONN. CONTROL CH02	J01			2	V	72	10	04B			
	3	F	78	01	07		CONN. CONTROL CH03	J01			2	V	72	10	04C			
	3	F	78	01	08		CONN. CONTROL CH03	J01			9	R	73	01	62		CCNN. CONTROL BASIS UNITS	J01
	3	F	79	01	07		CONN. CONTROL CH04	J01					76	05	06		CONNECTION BOARD CUT1	J101
	3	F	79	01	08		CONN. CONTROL CH04	J01					76	06	06		CONNECTION BOARD CUT2	J201
	3	F	80	01	07		CONN. CONTROL CH05	J01			2	L	76	07	03		CCNN. B. SUPPLY FIELD	J01
	3	F	80	01	08		CONN. CONTROL CH05	J01					77	05	06		CONNECTION BOARD CUT1	J101
	3	F	81	01	07		CONN. CONTROL CH06	J01					77	06	06		CONNECTION BOARD CUT2	J201
	3	F	81	01	08		CONN. CONTROL CH06	J01			2	U	77	07	03		CCNN. B. SUPPLY FIELD	J02
	3	F	82	01	07		CONN. CONTROL CH07	J01					78	05	06		CONNECTION BOARD CUT1	J101
	3	F	82	01	08		CONN. CONTROL CH07	J01					78	06	06		CONNECTION BOARD CUT2	J201
	3	F	83	01	07		CONN. CONTROL CH08	J01			2	L	78	07	03		CCNN. B. SUPPLY FIELD	J03
	3	F	83	01	08		CONN. CONTROL CH08	J01					79	05	06		CONNECTION BOARD CUT1	J101
			94	01	32A		MASTER OSCILLATOR	P01			2	U	79	06	06		CONNECTION BOARD CUT2	J201
													79	07	03		CCNN. B. SUPPLY FIELD	J04
+ 5.0 -B	3	F	57	04	02		CONN. CH. FEED	J04					80	05	06		CONNECTION BOARD CUT1	J101
	3	F	58	04	02		CONN. CH. FEED	J04					80	06	06		CONNECTION BOARD CUT2	J201
	3	F	59	04	02		CONN. CH. FEED	J04			2	U	80	07	03		CCNN. B. SUPPLY FIELD	J05
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 TAPE RECORDER ***STUDER A800*** AUDIO SECTION 80/01/15

SIG.NAME	COLOR	TYPE	GR	EL	PT	S	DESCRIPTION OF ELEMENT		SIG.NAME	COLOR	TYPE	GR	EL	PT	S	DESCRIPTION OF ELEMENT		
(CCNT.)			81	05	06		CONNECTION BOARD OUT1 CH06	J101	(CCNT.)	1	M	71	04	17		CCNN. LOWER CH. LEVEL	J04	
			81	06	06		CONNECTION BOARD CUT2 CH06	J201		1	R	73	01	52		CCNN. CONTROL BASIS UNITS	J01	
2	U		81	07	03		CONN. B. SUPPLY FIELD CH06			1	B	73	05	14		CCNN. NOISE REDUCTION SYST.	J05	
			82	05	06		CONNECTION BOARD OUT1 CH07	J101		1	R	74	01	52		CCNN. CONTROL BASIS UNITS	J01	
			82	06	06		CONNECTION BOARD CUT2 CH07	J201		1	B	74	05	14		CCNN. NOISE REDUCTION SYST.	J05	
2	U		82	07	03		CONN. B. SUPPLY FIELD CH07			1	R	75	01	52		CCNN. CONTROL BASIS UNITS	J01	
			83	05	06		CONNECTION BOARD OUT1 CH08	J101		1	B	75	05	14		CCNN. NOISE REDUCTION SYST.	J05	
			83	06	06		CONNECTION BOARD CUT2 CH08	J201				94	01	20B		MASTER OSCILLATOR	P01	
2	U		83	07	03		CONN. B. SUPPLY FIELD CH08											
			94	01	16B		MASTER OSCILLATOR	P01	+24.CTLS	6	R	52	03	15		CCNN. REC. HEAD CH01-16	J03	
+15.0 -B	0	F	52	08	12		CONN. REP. AMP. CH09-16	J08		6	F	52	11	12		CCNN. CODE CHANNEL	J11	
		M	57	03	14		CONN. HEAD SIGNALS	J03		1	B	72	02	20		CONN. TAPE DECK	J02	
2	F		57	04	20		CONN. CH. FEED	J04		1	V	72	03	04		MASTER BOARD 2		
		M	58	03	14		CONN. HEAD SIGNALS	J03		4	V	72	03	05		MASTER BOARD 2		
2	F		58	04	20		CONN. CH. FEED	J04		4	A	72	09	32		CONNECTOR EXPANSION UNIT		
		M	59	03	14		CONN. HEAD SIGNALS	J03	-15.C -A	6	F	52	07	16		CCNN. REP. AMP. CHC1-C8	J07	
2	F		59	04	20		CONN. CH. FEED	J04			M	53	03	15		CCNN. HEAD SIGNALS	J03	
0	M		60	03	14		CONN. HEAD SIGNALS	J03			F	53	04	19		CONN. CH. FEED	J04	
2	F		60	04	20		CONN. CH. FEED	J04		6	F	54	03	15		CCNN. HEAD SIGNALS	J03	
2	F		70	01	20		CONN. VU-PANEL	J01			M	54	04	19		CCNN. CH. FEED	J04	
2	F		70	02	20		CONN. POWER SUPPLY	J02		6	F	55	03	15		CCNN. HEAD SIGNALS	J03	
2	F		70	03	20		CONN. CH. FEED	J03			M	55	04	19		CCNN. CH. FEED	J04	
2	R		74	01	62		CONN. CONTROL BASIS UNITS	J01		6	M	56	03	15		CCNN. HEAD SIGNALS	J03	
+15.0 -C	0	F	52	09	12		CONN. REP. AMP. CH17-24	J09		6	F	56	04	19		CONN. CH. FEED	J04	
		M	61	03	14		CONN. HEAD SIGNALS	J03		6	F	69	01	19		CONN. MASTER- VU-PANEL	J01	
2	F		61	04	20		CONN. CH. FEED	J04		6	F	69	02	19		CONN. POWER SUPPLY	J02	
		M	62	03	14		CONN. HEAD SIGNALS	J03		6	F	69	03	19		CONN. CH. FEED	J03	
2	F		62	04	20		CONN. CH. FEED	J04		6	B	72	01	37		CONN. JUNCTION BOX	J01	
		M	63	03	14		CONN. HEAD SIGNALS	J03		6	B	72	01	38		CONN. JUNCTION BOX	J01	
2	F		63	04	20		CONN. CH. FEED	J04		6	V	72	04	05		MASTER BOARD 3		
0	M		64	03	14		CONN. HEAD SIGNALS	J03		6	V	72	10	05A				
2	F		64	04	20		CONN. CH. FEED	J04		6	V	72	10	05B				
2	F		71	01	20		CONN. VU-PANEL	J01		6	V	72	10	05C				
2	F		71	02	20		CONN. POWER SUPPLY	J02		6	R	73	01	61		CCNN. CONTROL BASIS UNITS	J01	
2	F		71	03	20		CONN. CH. FEED	J03				76	05	04		CONNECTION BOARD CUT1	J101	
2	R		75	01	62		CONN. CONTROL BASIS UNITS	J01				76	06	04		CONNECTION BOARD CUT2	J201	
+15.0 -D	0	F	52	10	12		CONN. REP. AMP. CH25-32	J10		6	U	76	07	02		CONN. B. SUPPLY FIELD	J01	
													77	05	04		CONNECTION BOARD CUT1	J101
+15.0 -Z			90	01	16B		REPRODUCE AMP. CH XY	P01					77	06	04		CONNECTION BOARD CUT2	J201
			91	01	16B		SYNC. AMP. CHXY	P01					78	05	04		CONNECTION BOARD CUT1	J101
			92	01	16B		RECORD AMP. CH XY	P01					78	06	04		CONNECTION BOARD CUT2	J201
			93	01	16B		HF DRIVER CH. XY	P01		6	U	78	07	02		CONN. B. SUPPLY FIELD	J03	
			95	01	16B		REPROD. PREAMP. CH X1 TO X8	P01					79	05	04		CONNECTION BOARD CUT1	J101
													79	06	04		CONNECTION BOARD CUT2	J201
+24.0	1	F	69	01	22		CONN. MASTER- VU-PANEL	J01		6	U	79	07	02		CONN. B. SUPPLY FIELD	J04	
	1	F	69	02	17		CONN. POWER SUPPLY	J02				80	05	04		CONNECTION BOARD CUT1	J101	
	1	M	69	04	17		CONN. LOWER CH. LEVEL	J04				80	06	04		CONNECTION BOARD CUT2	J201	
	1	F	69	06	21		CONN. TAPE DECK	J06		6	U	80	07	02		CONN. B. SUPPLY FIELD	J05	
	1	F	70	01	22		CONN. VU-PANEL	J01				81	05	04		CONNECTION BOARD CUT1	J101	
	1	F	70	02	17		CONN. POWER SUPPLY	J02				81	06	04		CONNECTION BOARD CUT2	J201	
	1	M	70	04	17		CONN. LOWER CH. LEVEL	J04		6	U	81	07	02		CONN. B. SUPPLY FIELD	J06	
	1	F	71	01	22		CONN. VU-PANEL	J01				82	05	04		CONNECTION BOARD CUT1	J101	
	1	F	71	02	17		CONN. POWER SUPPLY	J02				82	06	04		CONNECTION BOARD CUT2	J201	

SIG.NAME	COLOR	TYPE	GR	EL	PT	S	DESCRIPTION OF ELEMENT	SIG.NAME	COLOR	TYPE	GR	EL	PT	S	DESCRIPTION OF ELEMENT
(CONT.)	6	U	82	07	02		CONN. B. SUPPLY FIELD CH07	(CCAT.)	9	F	80	01	24		CONN. CONTROL CH05
			83	05	04		CONNECTION BOARD OUT1 CH08 J101		9	F	81	01	23		CONN. CONTROL CH06
			83	06	04		CONNECTION BOARD OUT2 CH08 J201		9	F	81	01	24		CONN. CONTROL CH06
	6	U	83	07	02		CONN. B. SUPPLY FIELD CH08		9	F	82	01	23		CONN. CONTROL CH07
			94	01	14B		MASTER OSCILLATOR P01		9	F	82	01	24		CONN. CONTROL CH07
									9	F	83	01	23		CONN. CONTROL CH08
									9	F	83	01	24		CONN. CONTROL CH08
-15.0 -B	6	F	52	08	16		CONN. REP. AMP. CH09-16 J08								
		M	57	03	15		CONN. HEAD SIGNALS J03								
	6	F	57	04	19		CONN. CH. FEED J04	ACA12 -B	9	F	70	01	12		CONN. VU-PANEL J01
		M	58	03	15		CONN. HEAD SIGNALS J03		9	F	70	01	14		CONN. VU-PANEL J01
	6	F	58	04	19		CONN. CH. FEED J04		9	M	70	02	12		CONN. POWER SUPPLY J02
		M	59	03	15		CONN. HEAD SIGNALS J03		9	R	74	01	59		CONN. CONTROL BASIS UNITS J01
	6	F	59	04	19		CONN. CH. FEED J04		9	R	74	01	76		CONN. CONTROL BASIS UNITS J01
		M	60	03	15		CONN. HEAD SIGNALS J03								
	6	F	60	04	19		CONN. CH. FEED J04	ACA12 -C	9	F	71	01	12		CONN. VU-PANEL J01
		F	70	01	19		CONN. VU-PANEL J01		9	F	71	01	14		CONN. VU-PANEL J01
	6	F	70	02	19		CONN. POWER SUPPLY J02		9	M	71	02	12		CONN. POWER SUPPLY J02
		F	70	03	19		CONN. CH. FEED J03		9	R	75	01	59		CONN. CONTROL BASIS UNITS J01
	8	R	74	01	61		CONN. CONTROL BASIS UNITS J01		9	R	75	01	76		CONN. CONTROL BASIS UNITS J01
-15.0 -C	6	F	52	09	16		CONN. REP. AMP. CH17-24 J09	ACB12 -A	8	F	69	01	13		CONN. MASTER- VU-PANEL J01
		M	61	03	15		CONN. HEAD SIGNALS J03		8	F	69	01	15		CONN. MASTER- VU-PANEL J01
	6	F	61	04	19		CONN. CH. FEED J04		8	F	69	02	13		CONN. POWER SUPPLY J02
		M	62	03	15		CONN. HEAD SIGNALS J03		8	R	73	01	60		CONN. CONTROL BASIS UNITS J01
	6	F	62	04	19		CONN. CH. FEED J04		8	R	73	01	78		CONN. CONTROL BASIS UNITS J01
		M	63	03	15		CONN. HEAD SIGNALS J03		8	F	76	01	21		CONN. CONTROL CH01 J01
	6	F	63	04	19		CONN. CH. FEED J04		8	F	76	01	22		CONN. CONTROL CH01 J01
		M	64	03	15		CONN. HEAD SIGNALS J03		8	F	77	01	21		CONN. CONTROL CH02 J01
	6	F	64	04	19		CONN. CH. FEED J04		8	F	77	01	22		CONN. CONTROL CH02 J01
		F	71	01	19		CONN. VU-PANEL J01		8	F	78	01	21		CONN. CONTROL CH03 J01
	6	F	71	02	19		CONN. POWER SUPPLY J02		8	F	78	01	22		CONN. CONTROL CH03 J01
		F	71	03	19		CONN. CH. FEED J03		8	F	79	01	21		CONN. CONTROL CH04 J01
	8	R	75	01	61		CONN. CONTROL BASIS UNITS J01		8	F	79	01	22		CONN. CONTROL CH04 J01
									8	F	80	01	21		CONN. CONTROL CH05 J01
-15.0 -D	6	F	52	10	16		CONN. REP. AMP. CH25-32 J10		8	F	80	01	22		CONN. CONTROL CH05 J01
									8	F	81	01	21		CONN. CONTROL CH06 J01
-15.0 -Z			90	01	14B		REPRODUCE AMP. CH XY P01		8	F	81	01	22		CONN. CONTROL CH06 J01
			91	01	14B		SYNC. AMP. CHXY P01		8	F	82	01	21		CONN. CONTROL CH07 J01
			92	01	14B		RECORD AMP. CH XY P01		8	F	82	01	22		CONN. CONTROL CH07 J01
			93	01	14B		HF DRIVER CH. XY P01		8	F	83	01	21		CONN. CONTROL CH08 J01
			95	01	14B		REPROD. PREAMP. CH X1 TO X8 P01		8	F	83	01	22		CONN. CONTROL CH08 J01
ACA12 -A	9	F	69	01	12		CONN. MASTER- VU-PANEL J01	ACB12 -B	8	F	70	01	13		CONN. VU-PANEL J01
	9	F	69	01	14		CONN. MASTER- VU-PANEL J01		8	F	70	01	15		CONN. VU-PANEL J01
	9	M	69	02	12		CONN. POWER SUPPLY J02		8	F	70	02	13		CONN. POWER SUPPLY J02
	9	R	73	01	59		CONN. CONTROL BASIS UNITS J01		8	R	74	01	60		CONN. CONTROL BASIS UNITS J01
	9	R	73	01	76		CONN. CONTROL BASIS UNITS J01		8	R	74	01	78		CONN. CONTROL BASIS UNITS J01
	9	F	76	01	23		CONN. CONTROL CH01 J01								
	9	F	76	01	24		CONN. CONTROL CH01 J01	ACB12 -C	8	F	71	01	13		CONN. VU-PANEL J01
	9	F	77	01	23		CONN. CONTROL CH02 J01		8	F	71	01	15		CONN. VU-PANEL J01
	9	F	77	01	24		CONN. CONTROL CH02 J01		8	F	71	02	13		CONN. POWER SUPPLY J02
	9	F	78	01	23		CONN. CONTROL CH03 J01		8	R	75	01	60		CONN. CONTROL BASIS UNITS J01
	9	F	78	01	24		CONN. CONTROL CH03 J01		8	R	75	01	78		CONN. CONTROL BASIS UNITS J01
	9	F	79	01	23		CONN. CONTROL CH04 J01								
	9	F	79	01	24		CONN. CONTROL CH04 J01	AN-IN1XY			90	01	04B		REPRODUCE AMP. CH XY P01
	9	F	80	01	23		CONN. CONTROL CH05 J01				92	01	03A		RECORD AMP. CH XY P01
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SIG.NAME	COLOR	TYPE	GR	EL	PT	S	DESCRIPTION OF ELEMENT	SIG.NAME	COLOR	TYPE	GR	EL	PT	S	DESCRIPTION OF ELEMENT
AN-IN2XY			91	01	04B		SYNC. AMP. CHXY P01	(CONT.)	0	F	58	03	04		CONN. HEAD SIGNALS J03
			92	01	04B		RECORD AMP. CH XY PC1								
AN-PAMXY			90	01	08B		REPRODUCE AMP. CH XY P01	AN-PAM13	0	F	52	08	04		CONN. REP. AMP. CH09-16 J08
			91	01	08B		SYNC. AMP. CHXY P01		0	M	59	03	01		CONN. HEAD SIGNALS J03
AN-PAMX1			95	01	31A		REPROD. PREAMP. CH X1 TO X8 P01	AN-PAM14	0	F	52	08	03		CONN. REP. AMP. CH09-16 J08
									0	F	59	03	04		CONN. HEAD SIGNALS J03
AN-PAMX2			95	01	27A		REPROD. PREAMP. CH X1 TO X8 P01	AN-PAM15	0	F	52	08	02		CONN. REP. AMP. CH09-16 J08
									0	M	60	03	01		CONN. HEAD SIGNALS J03
AN-PAMX3			95	01	25A		REPROD. PREAMP. CH X1 TO X8 P01	AN-PAM16	0	F	52	08	01		CONN. REP. AMP. CH09-16 J08
									0	F	60	03	04		CONN. HEAD SIGNALS J03
AN-PAMX4			95	01	23A		REPROD. PREAMP. CH X1 TO X8 P01	AN-PAM17	0	F	52	09	21		CONN. REP. AMP. CH17-24 J09
									0	M	61	03	01		CONN. HEAD SIGNALS J03
AN-PAMX5			95	01	11A		REPROD. PREAMP. CH X1 TO X8 P01	AN-PAM18	0	F	52	09	22		CONN. REP. AMP. CH17-24 J09
									0	F	61	03	04		CONN. HEAD SIGNALS J03
AN-PAMX6			95	01	07A		REPROD. PREAMP. CH X1 TO X8 P01	AN-PAM19	0	F	52	09	23		CONN. REP. AMP. CH17-24 J09
									0	M	62	03	01		CONN. HEAD SIGNALS J03
AN-PAMX7			95	01	05A		REPROD. PREAMP. CH X1 TO X8 P01	AN-PAM20	0	F	52	09	24		CONN. REP. AMP. CH17-24 J09
									0	F	62	03	04		CONN. HEAD SIGNALS J03
AN-PAMX8			95	01	03A		REPROD. PREAMP. CH X1 TO X8 P01	AN-PAM21	0	F	52	09	04		CONN. REP. AMP. CH17-24 J09
									0	M	63	03	01		CONN. HEAD SIGNALS J03
AN-PAM01	0	F	52	07	21		CONN. REP. AMP. CH01-C8 J07	AN-PAM22	0	F	52	09	03		CONN. REP. AMP. CH17-24 J09
	0	M	53	03	01		CONN. HEAD SIGNALS J03		0	F	63	03	04		CONN. HEAD SIGNALS J03
AN-PAM02	0	F	52	07	22		CONN. REP. AMP. CH01-C8 J07	AN-PAM23	0	F	52	09	02		CONN. REP. AMP. CH17-24 J09
	0	F	53	03	04		CONN. HEAD SIGNALS J03		0	M	64	03	01		CONN. HEAD SIGNALS J03
AN-PAM03	0	F	52	07	23		CONN. REP. AMP. CH01-C8 J07	AN-PAM24	0	F	52	09	01		CONN. REP. AMP. CH17-24 J09
	0	M	54	03	01		CONN. HEAD SIGNALS J03		0	F	64	03	04		CONN. HEAD SIGNALS J03
AN-PAM04	0	F	52	07	24		CONN. REP. AMP. CH01-C8 J07	AN-PAM25	0	F	52	10	21		CONN. REP. AMP. CH25-32 J10
	0	F	54	03	04		CONN. HEAD SIGNALS J03		0	F	52	10	22		CONN. REP. AMP. CH25-32 J10
AN-PAM05	0	F	52	07	04		CONN. REP. AMP. CH01-C8 J07	AN-PAM26	0	F	52	10	23		CONN. REP. AMP. CH25-32 J10
	0	M	55	03	01		CONN. HEAD SIGNALS J03		0	F	52	10	24		CONN. REP. AMP. CH25-32 J10
AN-PAM06	0	F	52	07	03		CONN. REP. AMP. CH01-C8 J07	AN-PAM27	0	F	52	10	04		CONN. REP. AMP. CH25-32 J10
	0	F	55	03	04		CONN. HEAD SIGNALS J03		0	F	52	10	03		CONN. REP. AMP. CH25-32 J10
AN-PAM07	0	F	52	07	02		CONN. REP. AMP. CH01-C8 J07	AN-PAM28	0	F	52	10	01		CONN. REP. AMP. CH25-32 J10
	0	M	56	03	01		CONN. HEAD SIGNALS J03		0	F	52	10	02		CONN. REP. AMP. CH25-32 J10
AN-PAM08	0	F	52	07	01		CONN. REP. AMP. CH01-C8 J07	AN-PAM29	0	F	52	10	01		CONN. REP. AMP. CH25-32 J10
	0	F	56	03	04		CONN. HEAD SIGNALS J03		0	F	52	10	01		CONN. REP. AMP. CH25-32 J10
AN-PAM09	0	F	52	08	21		CONN. REP. AMP. CH09-16 J08	AN-PAM30	0	F	52	10	03		CONN. REP. AMP. CH25-32 J10
	0	M	57	03	01		CONN. HEAD SIGNALS J03		0	F	52	10	02		CONN. REP. AMP. CH25-32 J10
AN-PAM10	0	F	52	08	22		CONN. REP. AMP. CH09-16 J08	AN-PAM31	0	F	52	10	01		CONN. REP. AMP. CH25-32 J10
	0	F	57	03	04		CONN. HEAD SIGNALS J03		0	F	52	10	01		CONN. REP. AMP. CH25-32 J10
AN-PAM11	0	F	52	08	23		CONN. REP. AMP. CH09-16 J08	AN-PAM32	0	F	52	10	01		CONN. REP. AMP. CH25-32 J10
	0	M	58	03	01		CONN. HEAD SIGNALS J03								
AN-PAM12	0	F	52	08	24		CONN. REP. AMP. CH09-16 J08	AN-REPLY			90	01	02B		REPRODUCE AMP. CH XY PC1
							./.				91	01	02B		SYNC. AMP. CHXY P01

SIG.NAME	COLOR	TYPE	GR	EL	PT	S	DESCRIPTION OF ELEMENT		SIG.NAME	COLOR	TYPE	GR	EL	PT	S	DESCRIPTION OF ELEMENT	
AN-SAMXY			90 91	01 01	07A 07A		REPRODUCE AMP. CH XY SYNC. AMP. CHXY	P01 P01	ANRECH13	0 0	R F	52 59	03 03	24 09		CCNN. REC. HEAD CH01-16 CONN. HEAD SIGNALS	J03 JC3
AN-SYNXY			90 91	01 01	07A 03A		REPRODUCE AMP. CH XY SYNC. AMP. CHXY	P01 P01	ANRECH14	0 0	R F	52 59	03 03	09 12		CCNN. REC. HEAD CH01-16 CONN. HEAD SIGNALS	J03 JC3
ANERACOH 0		R	52 52	05 11	04 07		CONN. ERASE HEAC CH01-16 CONN. CODE CHANNEL	J05 J11	ANRECH15	0 0	R F	52 60	03 03	09 12		CCNN. REC. HEAD CH01-16 CONN. HEAD SIGNALS	J03 JC3
ANERACOL 6 6		R F	52 52	05 11	04 08		CONN. ERASE HEAC CH01-16 CONN. CODE CHANNEL	J05 J11	ANRECH16	0 0	R F	52 60	03 03	26 12		CCNN. REC. HEAC CH01-16 CONN. HEAD SIGNALS	J03 JC3
ANRCCODH 0		R	52 52	03 11	03 04		CONN. REC. HEAD CH01-16 CONN. CODE CHANNEL	J03 J11	ANRECH17	0 0	R F	52 61	03 03	09 16		CCNN. REC. HEAD CH17-32 CONN. HEAD SIGNALS	J04 JC3
ANRCCODL 6 6		R F	52 52	03 11	04 05		CONN. REC. HEAD CH01-16 CONN. CODE CHANNEL	J03 J11	ANRECH18	0 0	R F	52 61	03 03	01 12		CCNN. REC. HEAD CH17-32 CONN. HEAD SIGNALS	J04 JC3
ANRECHXY			92	01	07A		RECORD AMP. CH XY	P01	ANRECH19	0 0	R F	52 62	04 03	31 09		CCNN. REC. HEAD CH17-32 CONN. HEAD SIGNALS	J04 JC3
ANRECH01 0 0		R M	52 53	03 03	16 09		CONN. REC. HEAD CH01-16 CONN. HEAD SIGNALS	J03 J03	ANRECH20	0 0	R F	52 62	04 03	18 12		CONN. REC. HEAD CH17-32 CONN. HEAD SIGNALS	J04 JC3
ANRECH02 0 0		R F	52 53	03 03	01 12		CONN. REC. HEAD CH01-16 CONN. HEAD SIGNALS	J03 J03	ANRECH21	0 0	R F	52 63	04 03	03 09		CCNN. REC. HEAD CH17-32 CONN. HEAD SIGNALS	J04 JC3
ANRECH03 0 0		R M	52 54	03 03	31 09		CONN. REC. HEAD CH01-16 CONN. HEAD SIGNALS	J03 J03	ANRECH22	0 0	R F	52 63	04 03	33 12		CCNN. REC. HEAD CH17-32 CONN. HEAD SIGNALS	J04 JC3
ANRECH04 0 0		R F	52 54	03 03	18 12		CONN. REC. HEAD CH01-16 CONN. HEAD SIGNALS	J03 J03	ANRECH23	0 0	R M	52 64	04 03	20 09		CCNN. REC. HEAD CH17-22 CONN. HEAD SIGNALS	J04 JC3
ANRECH05 0 0		R M	52 55	03 03	03 09		CONN. REC. HEAD CH01-16 CONN. HEAD SIGNALS	J03 J03	ANRECH24	0 0	R F	52 64	04 03	05 12		CCNN. REC. HEAD CH17-32 CONN. HEAD SIGNALS	J04 JC3
ANRECH06 0 0		R F	52 55	03 03	33 12		CONN. REC. HEAD CH01-16 CONN. HEAD SIGNALS	J03 J03	ANRECH25	0	R	52	04	35		CCNN. REC. HEAD CH17-32	J04
ANRECH07 0 0		R M	52 56	03 03	20 09		CONN. REC. HEAD CH01-16 CONN. HEAD SIGNALS	J03 J03	ANRECH26	0	R	52	04	22		CONN. REC. HEAD CH17-32	J04
ANRECH08 0 0		R F	52 56	03 03	05 12		CCNN. REC. HEAD CH01-16 CONN. HEAD SIGNALS	J03 J03	ANRECH27	0	R	52	04 07	07		CCNN. REC. HEAD CH17-32	J04
ANRECH09 0 0		R M	52 57	03 03	35 09		CCNN. REC. HEAD CH01-16 CONN. HEAD SIGNALS	J03 J03	ANRECH29	0	R	52	04	24		CCNN. REC. HEAD CH17-32	J04
ANRECH10 0 0		R F	52 57	03 03	22 12		CCNN. REC. HEAD CH01-16 CONN. HEAD SIGNALS	J03 J03	ANRECH30	0	R	52	04	09		CCNN. REC. HEAD CH17-32	J04
ANRECH11 0 0		R M	52 58	03 03	07 09		CONN. REC. HEAC CH01-16 CONN. HEAD SIGNALS	J03 J03	ANRECH32	0	R	52	04	26		CCNN. REC. HEAD CH17-32	J04
ANRECH12 0 0		R F	52 58	03 03	37 12		CONN. REC. HEAD CH01-16 CONN. HEAD SIGNALS	J03 J03	ANRECLXY			92	01	06B		RECCFE AMP. CH XY	P01
									ANRECL01	6 6	R F	52 53	03 03	17 10		CCNN. REC. HEAD CH01-16 CONN. HEAD SIGNALS	J03 JC3

SIG.NAME	COLOR	TYPE	GR	EL	PT	S	DESCRIPTION OF ELEMENT		SIG.NAME	COLOR	TYPE	GR	EL	PT	S	DESCRIPTION OF ELEMENT	
ANRECL02	6	R	52	03	02		CONN. REC. HEAD CH01-16	J03	ANRECL21	6	R	52	04	04		CONN. REC. HEAD CH17-32	J04
	6	F	53	03	11		CONN. HEAD SIGNALS	J03		6	M	63	03	10		CCNN. HEAD SIGNALS	J03
ANRECL03	6	R	52	03	32		CONN. REC. HEAD C#01-16	J03	ANRECL22	6	R	52	04	34		CCNN. REC. HEAD CH17-32	J04
	6	M	54	03	10		CONN. HEAD SIGNALS	J03		6	F	63	03	11		CCNN. HEAD SIGNALS	J03
ANRECL04	6	R	52	03	19		CONN. REC. HEAD CH01-16	J03	ANRECL23	6	R	52	04	21		CONN. REC. HEAD CH17-32	J04
	6	F	54	03	11		CONN. HEAD SIGNALS	J03		6	M	64	03	10		CCNN. HEAD SIGNALS	J03
ANRECL05	6	R	52	03	04		CONN. REC. HEAD C#01-16	J03	ANRECL24	6	R	52	04	06		CONN. REC. HEAD CH17-32	J04
	6	M	55	03	10		CONN. HEAD SIGNALS	J03		6	F	64	03	11		CCNN. HEAD SIGNALS	J03
ANRECL06	6	R	52	03	34		CONN. REC. HEAD C#01-16	J03	ANRECL25	6	R	52	04	36		CCNN. REC. HEAD CH17-32	J04
	6	F	55	03	11		CONN. HEAD SIGNALS	J03	ANRECL26	6	R	52	04	23		CCNN. REC. HEAD CH17-32	J04
ANRECL07	6	R	52	03	21		CONN. REC. HEAD C#01-16	J03	ANRECL27	6	R	52	04	08		CONN. REC. HEAD CH17-32	J04
	6	M	56	03	10		CONN. HEAD SIGNALS	J03	ANRECL28	6	R	52	04	38		CCNN. REC. HEAD CH17-32	J04
ANRECL08	6	R	52	03	06		CONN. REC. HEAD CH01-16	J03	ANRECL29	6	R	52	04	25		CONN. REC. HEAD CH17-32	J04
	6	F	56	03	11		CONN. HEAD SIGNALS	J03	ANRECL30	6	R	52	04	10		CONN. REC. HEAD CH17-32	J04
ANRECL09	6	R	52	03	36		CONN. REC. HEAD C#01-16	J03	ANRECL31	6	R	52	04	40		CCNN. REC. HEAD CH17-32	J04
	6	M	57	03	10		CONN. HEAD SIGNALS	J03	ANRECL32	6	R	52	04	27		CONN. REC. HEAD CH17-32	J04
ANRECL10	6	R	52	03	23		CONN. REC. HEAD CH01-16	J03	ANRECL33	6	R	52	04	27		CONN. REC. HEAD CH17-32	J04
	6	F	57	03	11		CONN. HEAD SIGNALS	J03	ANREPC00	0	R	52	01	43		CONN. REP. HEAD CH01-16	J01
ANRECL11	6	R	52	03	08		CONN. REC. HEAD CH01-16	J03		0	F	52	11	01		CCNN. CODE CHANNEL	J11
	6	M	58	03	10		CONN. HEAD SIGNALS	J03	ANREPC01	6	R	52	01	44		CONN. REP. HEAD CH01-16	J01
ANRECL12	6	R	52	03	38		CONN. REC. HEAD CH01-16	J03		6	F	52	11	02		CCNN. CODE CHANNEL	J11
	6	F	58	03	11		CONN. HEAD SIGNALS	J03	ANREPHX1			95	01	32B		REPRCD. PREAMP. CH X1 TO X8	P01
ANRECL13	6	R	52	03	25		CONN. REC. HEAD CH01-16	J03	ANREPHX2			95	01	29A		REPRCD. PREAMP. CH X1 TO X8	P01
	6	M	59	03	10		CONN. HEAD SIGNALS	J03	ANREPHX3			95	01	27C		REPRCD. PREAMP. CH X1 TO X8	P01
ANRECL14	6	R	52	03	10		CONN. REC. HEAD CH01-16	J03	ANREPHX4			95	01	24B		REPRCD. PREAMP. CH X1 TO X8	P01
	6	F	59	03	11		CONN. HEAD SIGNALS	J03	ANREPHX5			95	01	12B		REPRCD. PREAMP. CH X1 TO X8	P01
ANRECL15	6	R	52	03	40		CONN. REC. HEAD C#01-16	J03	ANREPHX6			95	01	09A		REPRCD. PREAMP. CH X1 TO X8	P01
	6	M	60	03	10		CONN. HEAD SIGNALS	J03	ANREPHX7			95	01	07C		REPRCD. PREAMP. CH X1 TO X8	P01
ANRECL16	6	R	52	03	27		CONN. REC. HEAD CH01-16	J03	ANREPHX8			95	01	04B		REPRCD. PREAMP. CH X1 TO X8	P01
	6	F	60	03	11		CONN. HEAD SIGNALS	J03	ANREPH01	1	R	52	01	16		CONN. REP. HEAD CH01-16	J01
ANRECL17	6	R	52	04	17		CONN. REC. HEAD CH17-32	J04	ANREPH02	1	R	52	01	16		CONN. REP. HEAD CH01-16	J01
	6	M	61	03	10		CONN. HEAD SIGNALS	J03	ANREPH03	2	R	52	01	01		CCNN. REP. HEAD CH01-16	J01
ANRECL18	6	R	52	04	02		CONN. REC. HEAD CH17-32	J04	ANREPH04	2	R	52	01	31		CONN. REP. HEAD CH01-16	J01
	6	F	61	03	11		CONN. HEAD SIGNALS	J03	ANREPH05	3	R	52	01	31		CONN. REP. HEAD CH01-16	J01
ANRECL19	6	R	52	04	32		CONN. REC. HEAD CH17-32	J04									
	6	M	62	03	10		CONN. HEAD SIGNALS	J03									
ANRECL20	6	R	52	04	19		CONN. REC. HEAD CH17-32	J04									
	6	F	62	03	11		CONN. HEAD SIGNALS	J03									

SIG.NAME	COLOR	TYPE	GR	EL	PT	S	DESCRIPTION OF ELEMENT	SIG.NAME	COLOR	TYPE	GR	EL	PT	S	DESCRIPTION OF ELEMENT
ANREPH04	4	R	52	01	18		CONN. REP. HEAD CH01-16 J01	ANREPH32	8	R	52	02	26		CCNN. REP. HEAD CH17-32 J02
ANREPH05	5	R	52	01	03		CONN. REP. HEAD CH01-16 J01	ANREPLX1			95	01	31C		REPRCD. PREAMP. CH X1 TO X8 P01
ANREPH06	6	R	52	01	33		CONN. REP. HEAD CH01-16 J01	ANREPLX2			95	01	29C		REPRCD. PREAMP. CH X1 TO X8 P01
ANREPH07	7	R	52	01	20		CONN. REP. HEAD CH01-16 J01	ANREPLX3			95	01	26B		REPRCD. PREAMP. CH X1 TO X8 P01
ANREPH08	8	R	52	01	05		CONN. REP. HEAD CH01-16 J01	ANREPLX4			95	01	23C		REPRCD. PREAMP. CH X1 TO X8 P01
ANREPH09	1	R	52	01	35		CONN. REP. HEAD CH01-16 J01	ANREPLX5			95	01	11C		REPRCD. PREAMP. CH X1 TO X8 P01
ANREPH10	2	R	52	01	22		CONN. REP. HEAD CH01-16 J01	ANREPLX6			95	01	09C		REPRCD. PREAMP. CH X1 TO X8 P01
ANREPH11	3	R	52	01	07		CONN. REP. HEAD CH01-16 J01	ANREPLX7			95	01	06B		REPRCD. PREAMP. CH X1 TO X8 P01
ANREPH12	4	R	52	01	37		CONN. REP. HEAD CH01-16 J01	ANREPLX8			95	01	03C		REPRCD. PREAMP. CH X1 TO X8 P01
ANREPH13	5	R	52	01	24		CONN. REP. HEAD CH01-16 J01	ANREPL01	0	R	52	01	17		CCNN. REP. HEAD CHC1-16 J01
ANREPH14	6	R	52	01	09		CONN. REP. HEAD CH01-16 J01	ANREPL02	0	R	52	01	02		CCNN. REP. HEAD CH01-16 J01
ANREPH15	7	R	52	01	39		CONN. REP. HEAD CH01-16 J01	ANREPLC3	0	R	52	01	32		CCNN. REP. HEAD CHC1-16 J01
ANREPH16	8	R	52	01	26		CONN. REP. HEAD CH01-16 J01	ANREPL04	0	R	52	01	19		CCNN. REP. HEAD CHC1-16 J01
ANREPH17	1	R	52	02	16		CONN. REP. HEAD CH17-32 J02	ANREPLC5	0	R	52	01	04		CCNN. REP. HEAD CH01-16 J01
ANREPH18	2	R	52	02	01		CONN. REP. HEAD CH17-32 J02	ANREPL06	0	R	52	01	34		CCNN. REP. HEAD CHC1-16 J01
ANREPH19	3	R	52	02	31		CONN. REP. HEAD CH17-32 J02	ANREPLC7	0	R	52	01	21		CCNN. REP. HEAD CH01-16 J01
ANREPH20	4	R	52	02	18		CONN. REP. HEAD CH17-32 J02	ANREPLC8	0	R	52	01	06		CCNN. REP. HEAD CHC1-16 J01
ANREPH21	5	R	52	02	03		CONN. REP. HEAD CH17-32 J02	ANREPLC9	0	R	52	01	36		CCNN. REP. HEAD CHC1-16 J01
ANREPH22	6	R	52	02	33		CONN. REP. HEAD CH17-32 J02	ANREPL10	0	R	52	01	23		CCNN. REP. HEAD CHC1-16 J01
ANREPH23	7	R	52	02	20		CONN. REP. HEAD CH17-32 J02	ANREPL11	0	R	52	01	08		CCNN. REP. HEAD CHC1-16 J01
ANREPH24	8	R	52	02	05		CONN. REP. HEAD CH17-32 J02	ANREPL12	0	R	52	01	38		CCNN. REP. HEAD CH01-16 J01
ANREPH25	1	R	52	02	35		CONN. REP. HEAD CH17-32 J02	ANREPL13	0	R	52	01	25		CCNN. REP. HEAD CHC1-16 J01
ANREPH26	2	R	52	02	22		CONN. REP. HEAD CH17-32 J02	ANREPL14	0	R	52	01	10		CCNN. REP. HEAD CH01-16 J01
ANREPH27	3	R	52	02	07		CONN. REP. HEAD CH17-32 J02	ANREPL15	0	R	52	01	40		CCNN. REP. HEAD CHC1-16 J01
ANREPH28	4	R	52	02	37		CONN. REP. HEAD CH17-32 J02	ANREPL16	0	R	52	01	27		CCNN. REP. HEAD CHC1-16 J01
ANREPH29	5	R	52	02	24		CONN. REP. HEAD CH17-32 J02	ANREPL17	0	R	52	02	17		CCNN. REP. HEAD CH17-32 J02
ANREPH30	6	R	52	02	09		CONN. REP. HEAD CH17-32 J02	ANREPL18	0	R	52	02	02		CCNN. REP. HEAD CH17-32 J02
ANREPH31	7	R	52	02	39		CONN. REP. HEAD CH17-32 J02	ANREPL19	0	R	52	02	32		CCNN. REP. HEAD CH17-32 J02

SIG.NAME	COLOR	TYPE	GR	EL	PT	S	DESCRIPTION OF ELEMENT	SIG.NAME	COLOR	TYPE	GR	EL	PT	S	DESCRIPTION OF ELEMENT
ANREPL20	0	R	52	02	19		CONN. REP. HEAD CH17-32 J02	B-BDY-10	2	B	74	05	02		CCNN. NOISE REDUCTION SYST. J05
ANREPL21	0	R	52	02	04		CONN. REP. HEAD CH17-32 J02	B-BDY-11	3	B	74	05	03		CCNN. NOISE REDUCTION SYST. J05
ANREPL22	0	R	52	02	34		CONN. REP. HEAD CH17-32 J02	B-BDY-12	2	B	74	05	05		CCNN. NOISE REDUCTION SYST. J05
ANREPL23	0	R	52	02	21		CONN. REP. HEAD CH17-32 J02	B-BDY-13	5	B	74	05	06		CCNN. NOISE REDUCTION SYST. J05
ANREPL24	0	R	52	02	06		CONN. REP. HEAD CH17-32 J02	B-BDY-14	2	B	74	05	10		CCNN. NOISE REDUCTION SYST. J05
ANREPL25	0	R	52	02	36		CONN. REP. HEAD CH17-32 J02	B-BDY-15	6	B	74	05	11		CCNN. NOISE REDUCTION SYST. J05
ANREPL26	0	R	52	02	23		CONN. REP. HEAD CH17-32 J02	B-BDY-16	2	B	74	05	13		CCNN. NOISE REDUCTION SYST. J05
ANREPL27	0	R	52	02	08		CONN. REP. HEAD CH17-32 J02	B-BDY-17	1	B	75	05	01		CCNN. NOISE REDUCTION SYST. J05
ANREPL28	0	R	52	02	38		CONN. REP. HEAD CH17-32 J02	B-BDY-18	2	B	75	05	02		CCNN. NOISE REDUCTION SYST. J05
ANREPL29	0	R	52	02	25		CONN. REP. HEAD CH17-32 J02	B-BDY-19	3	B	75	05	03		CCNN. NOISE REDUCTION SYST. J05
ANREPL30	0	R	52	02	10		CONN. REP. HEAD CH17-32 J02	B-BDY-20	2	B	75	05	05		CCNN. NOISE REDUCTION SYST. J05
ANREPL31	0	R	52	02	40		CONN. REP. HEAD CH17-32 J02	B-BDY-21	5	B	75	05	06		CCNN. NOISE REDUCTION SYST. J05
ANREPL32	0	R	52	02	27		CONN. REP. HEAD CH17-32 J02	B-BDY-22	2	B	75	05	10		CCNN. NOISE REDUCTION SYST. J05
AUDCMINH	9	F	69	01	16		CONN. MASTER- VU-PANEL J01	B-BDY-23	6	B	75	05	11		CCNN. NOISE REDUCTION SYST. J05
	9	M	69	06	07		CONN. TAPE DECK J06	B-BDY-24	2	B	75	05	13		CCNN. NOISE REDUCTION SYST. J05
	9	B	72	01	48		CONN. JUNCTION BOX J01	B-EXTREC	5	V	72	07	23		TLS SWITCH BOARD
	9	V	72	03	23		MASTER BOARD 2		5	A	72	09	16		CONNECTOR EXPANSION UNIT
B-BDY-01	1	B	73	05	01		CONN. NOISE REDUCTION SYST. J05	B-INPUT	6	V	72	07	10		TLS SWITCH BOARD
	1	F	76	01	19		CONN. CONTROL CH01 J01		6	A	72	09	17		CONNECTOR EXPANSION UNIT
B-BDY-02	2	B	73	05	02		CONN. NOISE REDUCTION SYST. J05	B-RCC-XY			93	01	24B		HF DRIVER CH. XY PC1
	2	F	77	01	19		CONN. CONTROL CH02 J01								
B-BDY-03	3	B	73	05	03		CONN. NOISE REDUCTION SYST. J05	B-RCD-C1	1	F	53	02	09		CCNN. CONTROL TC VU-PANEL J02
	3	F	78	01	19		CONN. CONTROL CH03 J01		1	R	73	01	35		CCNN. CONTROL BASIS UNITS J01
B-BDY-04	2	B	73	05	05		CONN. NOISE REDUCTION SYST. J05		1	R	73	04	33		CCNN. REMOTE CONTROL J04
	2	F	79	01	19		CONN. CONTROL CH04 J01		1	F	76	01	17		CCNN. CONTROL CH01 J01
B-BDY-05	5	B	73	05	06		CONN. NOISE REDUCTION SYST. J05		1	F	76	01	18		CCNN. CONTROL CHC1 J01
	5	F	80	01	19		CONN. CONTROL CH05 J01	B-RCD-C2	2	M	53	02	21		CCNN. CONTROL TC VU-PANEL J02
B-BDY-06	2	B	73	05	10		CONN. NOISE REDUCTION SYST. J05		2	R	73	01	36		CCNN. CONTROL BASIS UNITS J01
	2	F	81	01	19		CONN. CONTROL CH06 J01		2	R	73	04	34		CCNN. REMOTE CONTROL J04
B-BDY-07	6	B	73	05	11		CONN. NOISE REDUCTION SYST. J05		2	F	77	01	17		CCNN. CONTROL CH02 J01
	6	F	82	01	19		CONN. CONTROL CH07 J01		2	F	77	01	18		CCNN. CONTROL CHC2 J01
B-BDY-08	2	B	73	05	13		CONN. NOISE REDUCTION SYST. J05	B-RCD-C3	3	F	54	02	09		CCNN. CONTROL TC VU-PANEL J02
	2	F	83	01	19		CONN. CONTROL CH08 J01		3	R	73	01	37		CCNN. CONTROL BASIS UNITS J01
B-BDY-09	1	B	74	05	01		CONN. NOISE REDUCTION SYST. J05		3	F	78	01	17		CCNN. REMOTE CONTROL J04
									3	F	78	01	18		CCNN. CONTROL CH03 J01

SIG.NAME	COLOR	TYPE	GR	EL	PT	S	DESCRIPTION OF ELEMENT	SIG.NAME	COLOR	TYPE	GR	EL	PT	S	DESCRIPTION OF ELEMENT	
B-RCD-04	2	M	54	02	21		CONN. CONTROL TC VU-PANEL	J02	(CCNT.)	6	R	74	04	39	CONN. REMOTE CONTRCL	JC4
	2	R	73	01	38		CONN. CONTROL BASIS LKITS	J01								
	2	R	73	04	36		CONN. REMOTE CONTROL	J04	B-RCD-16	2	M	60	02	21	CCNA. CCNTROL TC VU-PANEL	J02
	2	F	79	01	17		CONN. CONTROL CH04	J01		2	R	74	01	42	CONN. CONTROL BASIS UNITS	JC1
	2	F	79	01	18		CONN. CONTROL CH04	J01		2	R	74	04	40	CONN. REMOTE CCNTRCL	JC4
B-RCD-05	5	F	55	02	09		CONN. CONTROL TC VU-PANEL	J02	B-RCC-17	1	F	61	02	09	CCNN. CONTROL TC VU-PANEL	JC2
	5	R	73	01	39		CONN. CONTROL BASIS LKITS	J01		1	R	75	01	35	CCNN. CONTROL BASIS UNITS	JC1
	5	R	73	04	37		CONN. REMOTE CONTROL	J04		1	R	75	04	33	CCNN. REMOTE CCNTRCL	JC4
	5	F	80	01	17		CONN. CONTROL CH05	J01	B-RCC-18	2	M	61	02	21	CCNN. CONTROL TC VU-PANEL	JC2
	5	F	80	01	18		CONN. CONTROL CH05	J01		2	R	75	01	36	CCNA. CCNTROL BASIS UNITS	JC1
B-RCD-06	2	M	55	02	21		CONN. CONTROL TC VU-PANEL	J02		2	R	75	04	34	CONN. REMOTE CCNTRCL	JC4
	2	R	73	01	40		CONN. CONTROL BASIS LKITS	J01	B-RCD-19	3	F	62	02	09	CCNA. CCNTROL TC VU-PANEL	JC2
	2	R	73	04	38		CONN. REMOTE CONTROL	J04		3	R	75	01	37	CCNA. CONTROL BASIS UNITS	JC1
	2	F	81	01	17		CONN. CONTROL CH06	J01		3	R	75	04	35	CONN. REMOTE CONTROL	JC4
	2	F	81	01	18		CONN. CONTROL CH06	J01	B-RCD-20	2	M	62	02	21	CCNA. CONTROL TC VU-PANEL	J02
B-RCD-07	6	F	56	02	09		CCNN. CONTROL TC VU-PANEL	J02		2	R	75	01	38	CCNN. CONTROL BASIS UNITS	JC1
	6	R	73	01	41		CONN. CONTROL BASIS LKITS	J01		2	R	75	04	36	CCNA. REMOTE CCNTRCL	JC4
	6	R	73	04	39		CONN. REMOTE CONTROL	J04	E-RCC-21	5	F	63	02	09	CCNN. CONTROL TC VU-PANEL	JC2
	6	F	82	01	17		CONN. CONTROL CH07	J01		5	R	75	01	39	CCNA. CONTROL BASIS UNITS	JC1
	6	F	82	01	18		CONN. CONTROL CH07	J01		5	R	75	04	37	CONN. REMOTE CCNTRCL	JC4
B-RCD-08	2	M	56	02	21		CCNN. CONTROL TC VU-PANEL	J02	B-RCD-22	2	M	63	02	21	CCNA. CCNTROL TC VU-PANEL	JC2
	2	R	73	01	42		CONN. CONTROL BASIS LKITS	J01		2	R	75	01	40	CCNA. CONTROL BASIS UNITS	JC1
	2	R	73	04	40		CONN. REMOTE CONTROL	J04		2	R	75	04	38	CONN. REMOTE CONTROL	JC4
	2	F	83	01	17		CCNN. CONTROL CH08	J01	B-RCD-23	6	F	64	02	09	CCNN. CONTROL TC VU-PANEL	J02
	2	F	83	01	18		CONN. CONTROL CH08	J01		6	R	75	01	41	CCNN. CONTROL BASIS UNITS	J01
B-RCD-09	1	F	57	02	09		CONN. CONTROL TC VU-PANEL	J02		6	R	75	04	39	CONN. REMOTE CCNTRCL	JC4
	1	R	74	01	35		CONN. CONTROL BASIS LKITS	J01	E-RCC-24	2	M	64	02	21	CONN. CONTROL TC VU-PANEL	JC2
	1	R	74	04	33		CONN. REMOTE CONTROL	J04		2	R	75	01	42	CCNA. CCNTROL BASIS UNITS	JC1
B-RCD-10	2	M	57	02	21		CONN. CONTROL TC VU-PANEL	J02		2	R	75	04	40	CCNA. REMOTE CCNTRCL	JC4
	2	R	74	01	36		CONN. CONTROL BASIS LKITS	J01	B-REA-XY			93	01	23A	HF DRIVER CH. XY	PC1
	2	R	74	04	34		CONN. REMOTE CONTROL	J04	B-REA-01	1	F	53	02	10	CCNN. CONTROL TC VU-PANEL	JC2
B-RCD-11	3	F	58	02	09		CONN. CONTROL TC VU-PANEL	J02		1	R	73	01	27	CCNA. CCNTROL BASIS UNITS	JC1
	3	R	74	01	37		CONN. CCNTROL BASIS LKITS	J01		1	R	73	04	25	CCNA. REMOTE CCNTRCL	JC4
	3	R	74	04	35		CONN. REMOTE CCNTRCL	J04		1	F	76	01	05	CCNN. CONTROL CHC1	JC1
B-RCD-12	2	M	58	02	21		CONN. CONTROL TC VU-PANEL	J02		1	F	76	01	06	CCNA. CCNTROL CHC1	JC1
	2	R	74	01	38		CONN. CONTROL BASIS UNITS	J01	B-REA-02	0	M	53	02	22	CCNN. CONTROL TC VU-PANEL	J02
	2	R	74	04	36		CONN. REMOTE CONTROL	J04		0	R	73	01	28	CCNN. CONTROL BASIS UNITS	J01
B-RCD-13	5	F	59	02	09		CONN. CONTROL TC VU-PANEL	J02		0	R	73	04	26	CCNA. REMOTE CCNTRCL	J04
	5	R	74	01	39		CONN. CONTROL BASIS LKITS	J01		0	F	77	01	05	CCNA. CCNTROL CH02	J01
	5	R	74	04	37		CONN. REMOTE CONTROL	J04		0	F	77	01	06	CCNN. CONTROL CH02	JC1
B-RCD-14	2	M	59	02	21		CONN. CCNTROL TC VU-PANEL	J02	B-REA-03	3	F	54	02	10	CONN. CONTROL TC VU-PANEL	J02
	2	R	74	01	40		CONN. CONTROL BASIS LKITS	J01		3	R	73	01	29	CCNN. CONTROL BASIS UNITS	JC1
	2	R	74	04	38		CONN. REMOTE CCNTRCL	J04		3	R	73	04	27	CCNA. REMOTE CCNTRCL	JC4
B-RCD-15	6	F	60	02	09		CONN. CONTROL TC VU-PANEL	J02		3	F	78	01	05	CCNA. CCNTROL CH03	J01
	6	R	74	01	41		CONN. CCNTROL BASIS UNITS	J01								./.

SIG.NAME	COLOR	TYPE	GR	EL	PT	S	DESCRIPTION OF ELEMENT	SIG.NAME	COLOR	TYPE	GR	EL	PT	S	DESCRIPTION OF ELEMENT		
(CONT.)	3	F	78	01	06		CCNN. CONTROL CH03	J01	B-REA-15	6	F	60	02	10	CCNN. CONTROL TC VU-PANEL	J02	
B-REA-04	0	M	54	02	22		CONN. CONTROL TC VU-PANEL	J02	E-REA-16	6	R	74	01	33	CCNN. CONTROL BASIS UNITS	J01	
	0	R	73	01	30		CONN. CONTROL BASIS UNITS	J01		6	R	74	04	31	CCNN. REMOTE CCNTRCL	J04	
	0	R	73	04	28		CONN. REMOTE CCNTRCL	J04		0	M	60	02	22	CCNN. CONTROL TC VU-PANEL	JC2	
	2	F	79	01	05		CONN. CONTROL CH04	J01		0	R	74	01	34	CCNA. CCNTRCL BASIS UNITS	JC1	
	2	F	79	01	06		CONN. CONTROL CH04	J01		0	R	74	04	32	CONN. REMOTE CCNTRCL	J04	
B-REA-05	5	F	55	02	10		CONN. CONTROL TC VU-PANEL	J02	E-REA-17	1	F	61	02	10	CCNA. CCNTRCL TC VU-PANEL	J02	
	5	R	73	01	31		CONN. CONTROL BASIS UNITS	J01		1	R	75	01	27	CCNA. CCNTRCL BASIS UNITS	J01	
	5	R	73	04	29		CONN. REMOTE CONTROL	J04		1	R	75	04	25	CONN. REMOTE CONTROL	J04	
	5	F	80	01	05		CONN. CONTROL CH05	J01		B-REA-18	0	M	61	02	22	CCNA. CCNTRCL TC VU-PANEL	J02
	5	F	80	01	06		CONN. CONTROL CH05	J01		0	R	75	01	28	CCNN. CONTROL BASIS UNITS	JC1	
B-REA-06	0	M	55	02	22		CONN. CONTROL TC VU-PANEL	J02		0	R	75	04	26	CCNN. REMOTE CCNTRCL	J04	
	0	R	73	01	32		CONN. CONTROL BASIS UNITS	J01	E-REA-19	3	F	62	02	10	CCNN. CONTROL TC VU-PANEL	J02	
	0	R	73	04	30		CONN. REMOTE CCNTRCL	J04		3	R	75	01	29	CCNA. CCNTRCL BASIS UNITS	J01	
	0	F	81	01	05		CONN. CONTROL CH06	J01		3	R	75	04	27	CCNN. REMOTE CCNTRCL	J04	
0	F	81	01	06		CONN. CONTROL CH06	J01	B-REA-20		0	M	62	02	22	CCNA. CCNTRCL TC VU-PANEL	JC2	
B-REA-07	6	F	56	02	10		CONN. CONTROL TC VU-PANEL	J02		0	R	75	01	30	CCNA. CCNTRCL BASIS UNITS	J01	
	6	R	73	01	33		CONN. CONTROL BASIS UNITS	J01		0	R	75	04	28	CCNN. REMOTE CCNTRCL	J04	
	6	R	73	04	31		CONN. REMOTE CCNTRCL	J04	B-REA-21	5	F	63	02	10	CCNA. CCNTRCL TC VU-PANEL	J02	
	6	F	82	01	05		CONN. CONTROL CH07	J01		5	R	75	01	31	CCNN. CONTROL BASIS UNITS	J01	
	6	F	82	01	06		CONN. CONTROL CH07	J01		5	R	75	04	29	CCNN. REMOTE CCNTRCL	J04	
B-REA-08	0	M	56	02	22		CONN. CONTROL TC VU-PANEL	J02		E-REA-22	0	M	63	02	22	CCNA. CCNTRCL TC VU-PANEL	JC2
	0	R	73	01	34		CONN. CONTROL BASIS UNITS	J01	0		R	75	01	32	CCNA. CCNTRCL BASIS UNITS	J01	
	0	R	73	04	32		CONN. REMOTE CONTROL	J04	0		R	75	04	30	CCNN. REMOTE CCNTRCL	J04	
	0	F	83	01	05		CONN. CONTROL CH08	J01	B-REA-23		6	F	64	02	10	CCNN. CONTROL TC VU-PANEL	JC2
	0	F	83	01	06		CONN. CONTROL CH08	J01		6	R	75	01	33	CCNA. CCNTRCL BASIS UNITS	J01	
B-REA-09	1	F	57	02	10		CONN. CONTROL TC VU-PANEL	J02		6	R	75	04	31	CONN. REMOTE CCNTRCL	J04	
	1	R	74	01	27		CONN. CCNTRCL BASIS LKITS	J01	B-REA-24	0	M	64	02	22	CCNA. CCNTRCL TC VU-PANEL	J02	
	1	R	74	04	25		CONN. REMOTE CONTROL	J04		0	R	75	01	34	CCNA. CONTROL BASIS UNITS	J01	
B-REA-10	0	M	57	02	22		CONN. CONTROL TC VU-PANEL	J02			0	R	75	04	32	CONN. REMOTE CONTROL	J04
	0	R	74	01	28		CONN. CONTROL BASIS UNITS	J01	B-READY	1	V	72	07	04	TLS SWITCH BOARD		
	0	R	74	04	26		CONN. REMOTE CCNTRCL	J04		1	A	72	09	04	CONNECTOR EXPANSION UNIT		
B-REA-11	3	F	58	02	10		CONN. CONTROL TC VU-PANEL	J02		B-RECORD	1	V	72	07	06	TLS SWITCH BOARD	
	3	R	74	01	29		CONN. CONTROL BASIS LKITS	J01	1		A	72	09	23	CONNECTOR EXPANSION UNIT		
	3	R	74	04	27		CONN. REMOTE CONTROL	J04	B-REHEAR		9	B	72	02	12	CCNA. TAPE DECK	J02
B-REA-12	0	M	58	02	22		CONN. CONTROL TC VU-PANEL	J02		9	V	72	03	24	MASTER BOARD 2		
	0	R	74	01	30		CONN. CONTROL BASIS LKITS	J01	B-REPRO	2	V	72	07	12	TLS SWITCH BOARD		
	0	R	74	04	28		CONN. REMOTE CONTROL	J04		2	A	72	09	05	CONNECTOR EXPANSION UNIT		
B-REA-13	5	F	59	02	10		CONN. CONTROL TC VU-PANEL	J02		B-SCCDE	3	V	72	07	27	TLS SWITCH BOARD	
	5	R	74	01	31		CONN. CONTROL BASIS UNITS	J01			3	A	72	09	06	CONNECTOR EXPANSION UNIT	
	5	R	74	04	29		CONN. REMOTE CONTROL	J04	B-SPTERA		9	B	72	02	25	CCNA. TAPE DECK	J02
B-REA-14	0	M	59	02	22		CONN. CONTROL TC VU-PANEL	J02								./.	
	0	R	74	01	32		CONN. CONTROL BASIS UNITS	J01									
	0	R	74	04	30		CONN. REMOTE CONTROL	J04									

SIG-NAME	COLOR	TYPE	GR	EL	PT	S	DESCRIPTION OF ELEMENT	SIG-NAME	COLOR	TYPE	GR	EL	PT	S	DESCRIPTION OF ELEMENT
(CONT.)	9	V	72	03	25		MASTER BOARD 2	B-SYN-10	9	M	57	02	16		CCNA. CONTROL TC VU-PANEL J02
B-SYN-XY			90	01	27A		REPRODUCE AMP. CH XY P01		9	R	74	01	44		CONN. CONTROL BASIS UNITS J01
			91	01	27A		SYNC. AMP. CHXY P01		9	R	74	04	42		CCNN. REMOTE CCNTRCL J04
B-SYN-01	1	F	53	02	04		CONN. CONTROL TO VU-PANEL J02	B-SYN-11	3	F	58	02	04		CONN. CONTROL TC VU-PANEL J02
	1	R	73	01	43		CONN. CONTROL BASIS UNITS J01		3	R	74	01	45		CONN. CONTROL BASIS UNITS J01
	1	R	73	04	41		CONN. REMCTE CNTRCL J04		3	R	74	04	43		CONA. REMCTE CCNTRCL J04
	1	F	76	01	03		CONN. CONTROL CH01 J01	B-SYN-12	2	M	58	02	16		CCNA. CONTROL TC VU-PANEL J02
	1	F	76	01	04		CONN. CONTROL CH01 J01		9	R	74	01	46		CCNA. CONTROL BASIS UNITS J01
B-SYN-02	9	M	53	02	16		CONN. CONTROL TO VU-PANEL J02		9	R	74	04	44		CCNN. REMOTE CONTROL J04
	9	R	73	01	44		CONN. CONTROL BASIS UNITS J01	B-SYN-13	5	F	59	02	04		CCNA. CONTROL TC VU-PANEL J02
	9	R	73	04	42		CONN. REMCTE CNTRCL J04		5	R	74	01	47		CCNN. CONTROL BASIS UNITS J01
	9	F	77	01	03		CONN. CONTROL CH02 J01		5	R	74	04	45		CONA. REMOTE CONTROL J04
	9	F	77	01	04		CONN. CONTROL CH02 J01	B-SYN-14	9	M	59	02	16		CONN. CONTROL TC VU-PANEL J02
B-SYN-03	3	F	54	02	04		CONN. CONTROL TC VU-PANEL J02		9	R	74	01	48		CCNN. CONTROL BASIS UNITS J01
	3	R	73	01	45		CONN. CONTROL BASIS UNITS J01		9	R	74	04	46		CCNA. REMOTE CCNTRCL J04
	3	R	73	04	43		CONN. REMCTE CNTRCL J04	B-SYN-15	6	F	60	02	04		CCNN. CONTROL TC VU-PANEL J02
	3	F	78	01	03		CONN. CONTROL CH03 J01		6	R	74	01	49		CCNA. CONTROL BASIS UNITS J01
	3	F	78	01	04		CONN. CONTROL CH03 J01		6	R	74	04	47		CCNN. REMOTE CONTROL J04
B-SYN-04	9	M	54	02	16		CONN. CONTROL TO VU-PANEL J02	B-SYN-16	9	M	60	02	16		CCNA. CONTROL TC VU-PANEL J02
	9	R	73	01	46		CONN. CONTROL BASIS UNITS J01		9	R	74	01	50		CCNN. CONTROL BASIS UNITS J01
	9	R	73	04	44		CONN. REMOTE CNTRCL J04		9	R	74	04	48		CCNA. REMOTE CCNTRCL J04
	9	F	79	01	03		CONN. CONTROL CH04 J01	B-SYN-17	1	F	61	02	04		CCNN. CONTROL TO VU-PANEL J02
	9	F	79	01	04		CONN. CONTROL CH04 J01		1	R	75	01	43		CCNA. CONTROL BASIS UNITS J01
B-SYN-05	5	F	55	02	04		CONN. CONTROL TC VU-PANEL J02		1	R	75	04	41		CCNA. REMOTE CCNTRCL J04
	5	R	73	01	47		CONN. CONTROL BASIS UNITS J01	B-SYN-18	9	M	61	02	16		CCNN. CONTROL TC VU-PANEL J02
	5	R	73	04	45		CONN. REMCTE CONTROL J04		9	R	75	01	44		CCNA. CONTROL BASIS UNITS J01
	5	F	80	01	03		CONN. CONTROL CH05 J01		9	R	75	04	42		CCNN. REMOTE CNTRCL J04
	5	F	80	01	04		CONN. CONTROL CH05 J01	B-SYN-19	3	F	62	02	04		CCNA. CONTROL TC VU-PANEL J02
B-SYN-06	9	M	55	02	16		CONN. CONTROL TO VU-PANEL J02		3	R	75	01	45		CCNN. CONTROL BASIS UNITS J01
	9	R	73	01	48		CONN. CONTROL BASIS UNITS J01		3	R	75	04	43		CCNA. REMOTE CCNTRCL J04
	9	R	73	04	46		CONN. REMCTE CONTROL J04	B-SYN-20	2	M	62	02	16		CCNN. CONTROL TO VU-PANEL J02
	9	F	81	01	03		CONN. CONTROL CH06 J01		9	R	75	01	46		CCNN. CONTROL BASIS UNITS J01
	9	F	81	01	04		CONN. CONTROL CH06 J01		9	R	75	04	44		CCNA. REMOTE CCNTRCL J04
B-SYN-07	6	F	56	02	04		CONN. CONTROL TO VU-PANEL J02	B-SYN-21	5	F	63	02	04		CCNN. CONTROL TC VU-PANEL J02
	6	R	73	01	49		CONN. CONTROL BASIS UNITS J01		5	R	75	01	47		CCNA. CONTROL BASIS UNITS J01
	6	R	73	04	47		CONN. REMCTE CNTRCL J04		5	R	75	04	45		CCNN. REMOTE CONTROL J04
	6	F	82	01	03		CONN. CONTROL CH07 J01	B-SYN-22	9	M	63	02	16		CCNA. CONTROL TC VU-PANEL J02
	6	F	82	01	04		CONN. CONTROL CH07 J01		9	R	75	01	48		CCNN. CONTROL BASIS UNITS J01
B-SYN-08	9	M	56	02	16		CONN. CONTROL TO VU-PANEL J02		9	R	75	04	46		CCNA. REMOTE CCNTRCL J04
	9	R	73	01	50		CONN. CONTROL BASIS UNITS J01	B-SYN-23	6	F	64	02	04		CCNN. CONTROL TO VU-PANEL J02
	9	R	73	04	48		CONN. REMCTE CCNTRCL J04		6	R	75	01	49		CCNA. CONTROL BASIS UNITS J01
	9	F	83	01	03		CONN. CONTROL CH08 J01		6	R	75	04	47		CCNA. REMCTE CCNTRCL J04
	9	F	83	01	04		CONN. CONTROL CH08 J01								
B-SYN-09	1	F	57	02	04		CONN. CONTROL TO VU-PANEL J02								
	1	R	74	01	43		CONN. CONTROL BASIS UNITS J01								
	1	R	74	04	41		CONN. REMCTE CNTRCL J04								

SIG-NAME	COLOR	TYPE	GR	EL	PT	S	DESCRIPTION OF ELEMENT	SIG-NAME	COLOR	TYPE	GR	EL	PT	S	DESCRIPTION OF ELEMENT
B-SYN-24	9	M	64	02	16		CCNN. CONTROL TC VU-PANEL J02	(CONT.)	9	F	54	03	20		CCNA. HEAD SIGNALS J03
	9	R	75	01	50		CONN. CONTROL BASIS UNITS J01		9	M	55	01	05		CCNN. AUDIO TO VU-PANEL J01
	9	R	75	04	48		CONN. REMOTE CONTROL J04		9	F	55	01	08		CCNN. AUDIO TC VU-PANEL J01
B-SYNCH	7	V	72	07	16		TLS SWITCH BOARD		9	M	55	01	09		CCNA. AUDIO TO VU-PANEL J01
	7	A	72	09	35		CONNECTOR EXPANSION UNIT		9	F	55	01	12		CCNN. AUDIO TO VU-PANEL J01
CCHINPTD	6	V	72	07	08		TLS SWITCH BOARD		9	M	55	01	17		CCNN. AUDIO TC VU-PANEL J01
	6	A	72	09	34		CONNECTOR EXPANSION UNIT		9	F	55	01	20		CCNA. AUDIO TO VU-PANEL J01
CCHONTD	2	V	72	07	28		TLS SWITCH BOARD		9	M	55	03	05		CCNN. HEAD SIGNALS J03
	2	A	72	09	24		CONNECTOR EXPANSION UNIT		9	F	55	03	06		CCNN. HEAD SIGNALS J03
CCHRDYTD	4	V	72	07	02		TLS SWITCH BOARD		9	F	55	03	07		CCNN. HEAD SIGNALS J03
	4	A	72	09	15		CONNECTOR EXPANSION UNIT		9	F	55	03	08		CCNN. HEAD SIGNALS J03
CCHREMTD	3	V	72	03	12		MASTER BOARD 2		9	M	55	03	13		CCNA. HEAD SIGNALS J03
	3	A	72	09	25		CONNECTOR EXPANSION UNIT		9	M	55	03	17		CCNN. HEAD SIGNALS J03
CCHSNCTD	5	V	72	07	11		TLS SWITCH BOARD		9	F	55	03	20		CCNN. HEAD SIGNALS J03
	5	A	72	09	33		CONNECTOR EXPANSION UNIT		9	M	56	01	05		CCNN. AUDIO TO VU-PANEL J01
CRAZCAN	2	B	72	02	05		CONN. TAPE DECK J02		9	F	56	01	08		CCNN. AUDIO TO VU-PANEL J01
	2	V	72	03	17		MASTER BOARD 2		9	F	56	01	09		CCNN. AUDIO TO VU-PANEL J01
DIDELINH	6	B	72	02	04		CONN. TAPE DECK J02		9	M	56	01	12		CCNN. AUDIO TO VU-PANEL J01
	6	V	72	03	16		MASTER BOARD 2		9	F	56	01	17		CCNN. AUDIO TO VU-PANEL J01
EXTRECTD	7	V	72	07	29		TLS SWITCH BOARD		9	M	56	01	20		CCNN. AUDIO TO VU-PANEL J01
	7	A	72	09	18		CONNECTOR EXPANSION UNIT		9	F	56	03	05		CCNN. HEAD SIGNALS J03
GND	9	M	53	01	05		CONN. AUDIO TC VU-PANEL J01		9	F	56	03	06		CCNN. HEAD SIGNALS J03
	9	F	53	01	08		CONN. AUDIO TO VU-PANEL J01		9	F	56	03	07		CCNN. HEAD SIGNALS J03
	9	M	53	01	09		CCNN. AUDIO TC VU-PANEL J01		9	M	56	03	08		CCNN. HEAD SIGNALS J03
	9	F	53	01	12		CONN. AUDIO TO VU-PANEL J01		9	F	56	03	13		CCNN. HEAD SIGNALS J03
	9	M	53	01	17		CONN. AUDIO TO VU-PANEL J01		9	M	56	03	17		CCNN. HEAD SIGNALS J03
	9	F	53	01	20		CONN. AUDIO TC VU-PANEL J01		9	F	56	03	20		CCNN. HEAD SIGNALS J03
	9	M	53	03	05		CONN. HEAD SIGNALS J03		9	M	56	03	25		CCNN. HEAD SIGNALS J03
	9	M	53	03	06		CONN. HEAD SIGNALS J03		9	F	56	03	28		CCNN. HEAD SIGNALS J03
	9	F	53	03	07		CONN. HEAD SIGNALS J03		9	M	56	03	33		CCNN. HEAD SIGNALS J03
	9	F	53	03	08		CONN. HEAD SIGNALS J03		9	F	56	03	37		CCNN. HEAD SIGNALS J03
	9	M	53	03	13		CONN. HEAD SIGNALS J03		9	M	56	03	42		CCNN. HEAD SIGNALS J03
	9	M	53	03	17		CONN. HEAD SIGNALS J03		9	F	56	03	47		CCNN. HEAD SIGNALS J03
	9	F	53	03	20		CONN. HEAD SIGNALS J03		9	M	56	03	52		CCNN. HEAD SIGNALS J03
	9	M	54	01	05		CONN. AUDIO TO VU-PANEL J01		9	F	56	03	57		CCNN. HEAD SIGNALS J03
	9	F	54	01	08		CONN. AUDIO TC VU-PANEL J01		9	M	56	03	62		CCNN. HEAD SIGNALS J03
	9	M	54	01	09		CONN. AUDIO TC VU-PANEL J01		9	F	56	03	67		CCNN. HEAD SIGNALS J03
	9	F	54	01	12		CONN. AUDIO TO VU-PANEL J01		9	M	56	03	72		CCNN. HEAD SIGNALS J03
	9	M	54	01	17		CONN. AUDIO TC VU-PANEL J01		9	F	56	03	77		CCNN. HEAD SIGNALS J03
	9	F	54	01	20		CONN. AUDIO TC VU-PANEL J01		9	M	56	03	82		CCNN. HEAD SIGNALS J03
	9	M	54	03	05		CONN. HEAD SIGNALS J03		9	F	56	03	87		CCNN. HEAD SIGNALS J03
	9	M	54	03	06		CONN. HEAD SIGNALS J03		9	M	56	03	92		CCNN. HEAD SIGNALS J03
	9	F	54	03	07		CONN. HEAD SIGNALS J03		9	F	56	03	97		CCNN. HEAD SIGNALS J03
	9	F	54	03	08		CONN. HEAD SIGNALS J03		9	M	56	03	102		CCNN. HEAD SIGNALS J03
	9	M	54	03	13		CONN. HEAD SIGNALS J03		9	F	56	03	107		CCNN. HEAD SIGNALS J03
	9	M	54	03	17		CONN. HEAD SIGNALS J03		9	M	56	03	112		CCNN. HEAD SIGNALS J03
							./.		9	F	56	03	117		CCNN. HEAD SIGNALS J03

SIG.NAME	COLOR	TYPE	GR	EL	PT	S	DESCRIPTION OF ELEMENT	SIG.NAME	COLOR	TYPE	GR	EL	PT	S	DESCRIPTION OF ELEMENT	
(CONT.)	9	M	59	01	09		CONN. AUDIO TO VU-PANEL	J01	(CONT.)	9	M	63	03	05	CCNN. HEAD SIGNALS	JC3
	9	F	59	01	12		CONN. AUDIO TO VU-PANEL	JC1		9	M	63	03	06	CCNN. HEAD SIGNALS	J03
	9	M	59	01	17		CONN. AUDIO TC VU-PANEL	J01		9	F	63	03	07	CONN. HEAD SIGNALS	JC3
	9	F	59	01	20		CONN. AUDIO TO VU-PANEL	J01		9	F	63	03	08	CCNN. HEAD SIGNALS	JC3
	9	M	59	03	05		CONN. HEAD SIGNALS	J03		9	M	63	03	13	CCNN. HEAD SIGNALS	JC3
	9	M	59	03	06		CONN. HEAD SIGNALS	J03		9	M	63	03	17	CONN. HEAD SIGNALS	JC3
	9	F	59	03	07		CONN. HEAD SIGNALS	J03		9	F	63	03	20	CCNN. HEAD SIGNALS	JC3
	9	F	59	03	08		CONN. HEAD SIGNALS	J03		9	F	64	01	05	CCNN. AUDIO TC VU-PANEL	JC1
	9	M	59	03	13		CONN. HEAD SIGNALS	J03		9	F	64	01	08	CCNN. AUDIO TO VU-PANEL	JC1
	9	M	59	03	17		CONN. HEAD SIGNALS	J03		9	F	64	01	09	CCNN. AUDIO TO VU-PANEL	JC1
	9	F	59	03	20		CONN. HEAD SIGNALS	J03		9	F	64	01	12	CCNN. AUDIO TO VU-PANEL	JC1
	9	M	60	01	05		CONN. AUDIO TC VU-PANEL	J01		9	M	64	01	17	CONN. AUDIO TC VU-PANEL	JC1
	9	F	60	01	08		CONN. AUDIO TO VU-PANEL	J01		9	F	64	01	20	CONN. AUDIO TO VU-PANEL	JC1
	9	M	60	01	09		CONN. AUDIO TC VU-PANEL	J01		9	M	64	03	05	CCNN. HEAD SIGNALS	J03
	9	F	60	01	12		CONN. AUDIO TC VU-PANEL	J01		9	M	64	03	06	CONN. HEAD SIGNALS	JC3
	9	M	60	01	17		CONN. AUDIO TO VU-PANEL	J01		9	F	64	03	07	CONN. HEAD SIGNALS	JC3
	9	F	60	01	20		CONN. AUDIO TO VU-PANEL	J01		9	F	64	03	08	CCNN. HEAD SIGNALS	J03
	9	M	60	03	05		CONN. HEAD SIGNALS	J03		9	M	64	03	13	CONN. HEAD SIGNALS	J03
	9	M	60	03	06		CONN. HEAD SIGNALS	J03		9	F	64	03	17	CONN. HEAD SIGNALS	JC3
	9	F	60	03	07		CONN. HEAD SIGNALS	J03		9	F	64	03	20	CCNN. HEAD SIGNALS	JC3
	9	F	60	03	08		CONN. HEAD SIGNALS	J03		9	L	73	11	01	CCNN. XLR OUT 1 CHC1	P11
	9	M	60	03	13		CONN. HEAD SIGNALS	J03		9	L	73	12	01	CCNN. XLR OUT 1 CHC2	P12
	9	M	60	03	17		CONN. HEAD SIGNALS	J03		9	L	73	13	01	CCNN. XLR OUT 1 CH03	P13
	9	F	60	03	20		CONN. HEAD SIGNALS	J03		9	L	73	14	01	CCNN. XLR OUT 1 CHC4	P14
	9	M	61	01	05		CONN. AUDIO TO VU-PANEL	J01		9	L	73	15	01	CCNN. XLR OUT 1 CHC5	P15
	9	F	61	01	08		CONN. AUDIO TO VU-PANEL	J01		9	L	73	16	01	CCNN. XLR OUT 1 CH06	P16
	9	M	61	01	09		CONN. AUDIO TC VU-PANEL	J01		9	L	73	17	01	CONN. XLR OUT 1 CHC7	P17
	9	F	61	01	12		CONN. AUDIO TO VU-PANEL	J01		9	L	73	18	01	CONN. XLR OUT 1 CHC8	P18
	9	M	61	01	17		CONN. AUDIO TO VU-PANEL	J01		9	L	73	21	01	CCNN. XLR OUT 2 CH01	P21
	9	F	61	01	20		CONN. AUDIO TC VU-PANEL	J01		9	L	73	22	01	CCNN. XLR OUT 2 CHC2	P22
	9	M	61	03	05		CONN. HEAD SIGNALS	J03		9	L	73	23	01	CCNN. XLR OUT 2 CHC3	P23
	9	M	61	03	06		CONN. HEAD SIGNALS	J03		9	L	73	24	01	CCNN. XLR OUT 2 CH04	P24
	9	F	61	03	07		CONN. HEAD SIGNALS	J03		9	L	73	25	01	CCNN. XLR OUT 2 CHC5	P25
	9	F	61	03	08		CONN. HEAD SIGNALS	J03		9	L	73	26	01	CCNN. XLR OUT 2 CHC6	P26
	9	M	61	03	13		CONN. HEAD SIGNALS	J03		9	L	73	27	01	CCNN. XLR OUT 2 CH07	P27
	9	M	61	03	17		CONN. HEAD SIGNALS	J03		9	L	73	28	01	CCNN. XLR OUT 2 CHC8	P28
	9	F	61	03	20		CONN. HEAD SIGNALS	JC3		9	L	73	31	01	CCNN. XLR INPUT CHC1	J31
	9	M	62	01	05		CONN. AUDIO TC VU-PANEL	J01		9	L	73	32	01	CCNN. XLR INPUT CHC2	J32
	9	F	62	01	08		CONN. AUDIO TC VU-PANEL	J01		9	L	73	33	01	CONN. XLR INPUT CHC3	J33
	9	M	62	01	09		CONN. AUDIO TC VU-PANEL	J01		9	L	73	34	01	CCNN. XLR INPUT CHC4	J34
	9	F	62	01	12		CONN. AUDIO TC VU-PANEL	J01		9	L	73	35	01	CCNN. XLR INPUT CHC5	J35
	9	M	62	01	17		CONN. AUDIO TC VU-PANEL	J01		9	L	73	36	01	CCNN. XLR INPUT CHC6	J36
	9	F	62	01	20		CONN. AUDIO TO VU-PANEL	J01		9	L	73	37	01	CCNN. XLR INPUT CHC7	J37
	9	M	62	03	05		CONN. HEAD SIGNALS	J03		9	L	73	38	01	CCNN. XLR INPUT CHC8	J38
	9	M	62	03	06		CONN. HEAD SIGNALS	J03		9	V	76	02	01	ATTENUATOR BOARD CHC1	
	9	F	62	03	07		CONN. HEAD SIGNALS	JC3		9	V	76	02	04	ATTENUATOR BOARD CHC1	
	9	F	62	03	08		CONN. HEAD SIGNALS	J03		9	V	76	02	05	ATTENUATOR BOARD CH01	
	9	M	62	03	13		CONN. HEAD SIGNALS	J03		9	V	76	03	01	TRANSF. CCNN. BOARD CUT1 CH01	
	9	M	62	03	17		CONN. HEAD SIGNALS	J03		9	V	76	03	04	TRANSF. CCNN. BOARD CUT1 CH01	
	9	F	62	03	20		CONN. HEAD SIGNALS	J03		9	V	76	03	05	TRANSF. CCNN. BOARD CUT1 CH01	
	9	M	63	01	05		CONN. AUDIO TC VU-PANEL	J01		9	V	76	04	01	TRANSF. CCNN. BOARD CUT2 CH01	
	9	F	63	01	08		CONN. AUDIO TC VU-PANEL	JC1		9	V	76	04	04	TRANSF. CCNN. BOARD CUT2 CH01	
	9	F	63	01	09		CONN. AUDIO TC VU-PANEL	J01		9	V	76	04	05	TRANSF. CCNN. BOARD CUT2 CH01	
	9	F	63	01	12		CONN. AUDIO TC VU-PANEL	J01		0	U	76	07	01	CCNN. B. SUPPLY FIELD CHC1	
	9	M	63	01	17		CONN. AUDIO TO VU-PANEL	J01		9	V	77	02	01	ATTENUATOR BOARD CH02	
	9	F	63	01	20		CONN. AUDIO TC VU-PANEL	J01		9	V	77	02	04	ATTENUATOR BOARD CHC2	

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SIG.NAME	COLOR	TYPE	GR	EL	PT	S	DESCRIPTION OF ELEMENT	SIG.NAME	COLOR	TYPE	GR	EL	PT	S	DESCRIPTION OF ELEMENT
(CONT.)	9	V	77	02	05		ATTENUATOR BOARD CH02	(CONT.)	9	V	82	04	05		TRANSF. CCNN. BOARD CUT2 CH07
	9	V	77	03	01		TRANSF. CCNN. BOARD CUT1 CH02		0	U	82	07	01		CCNN. B. SUPPLY FIELD CHC7
	9	V	77	03	04		TRANSF. CCNN. BOARD CUT1 CHC2		9	V	83	02	01		ATTENUATOR BOARD CH08
	9	V	77	03	05		TRANSF. CCNN. BOARD CUT1 CH02		9	V	83	02	04		ATTENUATOR BOARD CH08
	9	V	77	04	01		TRANSF. CCNN. BOARD CUT2 CH02		9	V	83	02	05		ATTENUATOR BOARD CH08
	9	V	77	04	04		TRANSF. CCNN. BOARD CUT2 CHC2		9	V	83	03	01		TRANSF. CCNN. BOARD CUT1 CH08
	9	V	77	04	05		TRANSF. CCNN. BOARD CUT2 CH02		9	V	83	03	04		TRANSF. CCNN. BOARD CUT1 CH08
	0	U	77	07	01		CCNN. B. SUPPLY FIELD CHC2		9	V	83	03	05		TRANSF. CCNN. BOARD CUT1 CH08
	9	V	78	02	01		ATTENUATOR BOARD CH03		9	V	83	04	01		TRANSF. CCNN. BOARD CUT2 CH08
	9	V	78	02	04		ATTENUATOR BOARD CH03		9	V	83	04	04		TRANSF. CCNN. BOARD CUT2 CH08
	9	V	78	02	05		ATTENUATOR BOARD CH03		9	V	83	04	05		TRANSF. CCNN. BOARD CUT2 CH08
	9	V	78	03	01		TRANSF. CCNN. BOARD CUT1 CHC3		C	U	83	07	01		CCNN. B. SUPPLY FIELD CH08
	9	V	78	03	04		TRANSF. CCNN. BOARD CUT1 CH03				90	01	05A		REPRCDUCE AMP. CH XY
	9	V	78	03	05		TRANSF. CCNN. BOARD CUT1 CH03				91	01	05A		SYNC. AMP. CHXY
	9	V	78	04	01		TRANSF. CCNN. BOARD CUT2 CHC3				92	01	05A		RECCRC AMP. CH XY
	9	V	78	04	04		TRANSF. CCNN. BOARD CUT2 CH03				93	01	05A		HF DRIVER CH. XY
	9	V	78	04	05		TRANSF. CCNN. BOARD CUT2 CH03				95	01	15A		REPRCD. PREAMP. CH X1 TC X8
	0	U	78	07	01		CCNN. B. SUPPLY FIELD CH03				95	01	15C		REPRCD. PREAMP. CH X1 TO X8
	9	V	79	02	01		ATTENUATOR BOARD CH04								
	9	V	79	02	04		ATTENUATOR BOARD CH04	INA	-XY		92	01	17A		RECCRC AMP. CH XY
	9	V	79	02	05		ATTENUATOR BOARD CH04								PC1
	9	V	79	03	01		TRANSF. CCNN. BOARD CUT1 CH04	INA	-C1 0	V	76	02	02		ATTENUATOR BOARD CH01
	9	V	79	03	04		TRANSF. CCNN. BOARD CUT1 CH04	INA	-C2 0	V	77	02	02		ATTENUATOR BOARD CH02
	9	V	79	03	05		TRANSF. CCNN. BOARD CUT1 CHC4	INA	-03 0	V	78	02	02		ATTENUATOR BOARD CHC3
	9	V	79	04	01		TRANSF. CCNN. BOARD CUT2 CH04	INA	-04 0	V	79	02	02		ATTENUATOR BOARD CHC4
	9	V	79	04	04		TRANSF. CCNN. BOARD CUT2 CH04	INA	-05 0	V	80	02	02		ATTENUATOR BOARD CH05
	9	V	79	04	05		TRANSF. CCNN. BOARD CUT2 CH04	INA	-06 0	V	81	02	02		ATTENUATOR BOARD CHC6
	0	U	79	07	01		CCNN. B. SUPPLY FIELD CH04	INA	-C7 C	V	82	02	02		ATTENUATOR BOARD CH07
	9	V	80	02	01		ATTENUATOR BOARD CH05	INA	-C8 0	V	83	02	02		ATTENUATOR BOARD CH08
	9	V	80	02	04		ATTENUATOR BOARD CH05								
	9	V	80	02	05		ATTENUATOR BOARD CH05	INA-01	0	M	53	01	01		CCNN. AUDIO TO VU-PANEL
	9	V	80	03	01		TRANSF. CCNN. BOARD CUT1 CH05		0	A	73	02	01		CCNN. AUDIO BASIS UNITS
	9	V	80	03	04		TRANSF. CCNN. BOARD CUT1 CHC5	INA-02	0	F	53	01	04		CCNN. AUDIO TO VU-PANEL
	9	V	80	03	05		TRANSF. CCNN. BOARD CUT1 CH05		0	A	73	02	04		CCNN. AUDIO BASIS UNITS
	9	V	80	04	01		TRANSF. CCNN. BOARD CUT2 CH05	INA-03	0	M	54	01	01		CCNN. AUDIO TO VU-PANEL
	9	V	80	04	04		TRANSF. CCNN. BOARD CUT2 CHC5		C	A	73	02	06		CCNN. AUDIO BASIS UNITS
	9	V	80	04	05		TRANSF. CCNN. BOARD CUT2 CH05	INA-04	0	F	54	01	04		CCNN. AUDIO TO VU-PANEL
	0	U	80	07	01		CCNN. B. SUPPLY FIELD CHC5		0	A	73	02	08		CCNN. AUDIO BASIS UNITS
	9	V	81	02	01		ATTENUATOR BOARD CH06	INA-05	0	M	55	01	01		CCNN. AUDIO TO VU-PANEL
	9	V	81	02	04		ATTENUATOR BOARD CH06		0	A	73	02	10		CCNN. AUDIO BASIS UNITS
	9	V	81	02	05		ATTENUATOR BOARD CH06	INA-06	0	F	55	01	04		CCNN. AUDIO TO VU-PANEL
	9	V	81	03	01		TRANSF. CCNN. BOARD CUT1 CHC6		0	A	73	02	12		CCNN. AUDIO BASIS UNITS
	9	V	81	03	04		TRANSF. CCNN. BOARD CUT1 CH06								
	9	V	81	03	05		TRANSF. CCNN. BOARD CUT1 CH06								
	9	V	81	04	01		TRANSF. CCNN. BOARD CUT2 CH06								
	9	V	81	04	04		TRANSF. CCNN. BOARD CUT2 CH06								
	9	V	81	04	05		TRANSF. CCNN. BOARD CUT2 CH06								
	0	U	81	07	01		CCNN. B. SUPPLY FIELD CH06								
	9	V	82	02	01		ATTENUATOR BOARD CH07								
	9	V	82	02	04		ATTENUATOR BOARD CH07								
	9	V	82	02	05		ATTENUATOR BOARD CH07								
	9	V	82	03	01		TRANSF. CCNN. BOARD CUT1 CH07	INA-07	0	M	56	01	01		CCNN. AUDIO TO VU-PANEL
	9	V	82	03	04		TRANSF. CCNN. BOARD CUT1 CH07								
	9	V	82	03	05		TRANSF. CCNN. BOARD CUT1 CH07								
	9	V	82	04	01		TRANSF. CCNN. BOARD CUT2 CH07								
	9	V	82	04	04		TRANSF. CCNN. BOARD CUT2 CH07								

SIG.NAME	COLOR	TYPE	GR	EL	PT	S	DESCRIPTION OF ELEMENT	SIG.NAME	COLOR	TYPE	GR	EL	PT	S	DESCRIPTION OF ELEMENT
(CONT.)	0	A	73	02	14		CONN. AUDIO BASIS UNITS	P02	INB -02	6	V	77	02	03	ATTENUATOR BOARD CHC2
INA-08	0	F	56	01	04	CONN.	AUDIO TC VU-PANEL	J01	INB -C3	6	V	78	02	03	ATTENUATOR BOARD CHC3
	0	A	73	02	16	CONN.	AUDIO BASIS UNITS	P02	INB -C4	6	V	79	02	03	ATTENUATOR BOARD CHC4
INA-09	0	M	57	01	01	CONN.	AUDIO TO VU-PANEL	J01	INB -05	6	V	80	02	03	ATTENUATOR BOARD CHC5
	0	A	74	02	01	CONN.	AUDIO BASIS UNITS	P02	INB -C6	6	V	81	02	03	ATTENUATOR BOARD CHC6
INA-10	0	F	57	01	04	CONN.	AUDIO TO VU-PANEL	J01	INB -C7	6	V	82	02	03	ATTENUATOR BOARD CHC7
	0	A	74	02	04	CONN.	AUDIO BASIS UNITS	P02	INB -C8	6	V	83	02	03	ATTENUATOR BOARD CHC8
INA-11	0	M	58	01	01	CONN.	AUDIO TO VU-PANEL	J01	INB-01	6	M	53	01	02	CONN. AUDIO TO VU-PANEL
	0	A	74	02	06	CONN.	AUDIO BASIS UNITS	P02		6	A	73	02	02	CONN. AUDIO BASIS UNITS
INA-12	0	F	58	01	04	CONN.	AUDIO TO VU-PANEL	J01	INB-C2	6	F	53	01	03	CONN. AUDIO TC VU-PANEL
	0	A	74	02	08	CONN.	AUDIO BASIS UNITS	P02		6	A	73	02	05	CONN. AUDIO BASIS UNITS
INA-13	0	M	59	01	01	CONN.	AUDIO TO VU-PANEL	J01	INB-C3	6	M	54	01	02	CONN. AUDIO TO VU-PANEL
	0	A	74	02	10	CONN.	AUDIO BASIS UNITS	P02		6	A	73	02	07	CONN. AUDIO BASIS UNITS
INA-14	0	F	59	01	04	CONN.	AUDIO TO VU-PANEL	J01	INB-04	6	F	54	01	03	CONN. AUDIO TC VU-PANEL
	0	A	74	02	12	CONN.	AUDIO BASIS UNITS	P02		6	A	73	02	09	CONN. AUDIO BASIS UNITS
INA-15	0	M	60	01	01	CONN.	AUDIO TO VU-PANEL	J01	INB-05	6	M	55	01	02	CONN. AUDIO TO VU-PANEL
	0	A	74	02	14	CONN.	AUDIO BASIS UNITS	P02		6	A	73	02	11	CONN. AUDIO BASIS UNITS
INA-16	0	F	60	01	04	CONN.	AUDIO TC VU-PANEL	J01	INB-C6	6	F	55	01	03	CONN. AUDIO TO VU-PANEL
	0	A	74	02	16	CONN.	AUDIO BASIS UNITS	P02		6	A	73	02	13	CONN. AUDIO BASIS UNITS
INA-17	0	M	61	01	01	CONN.	AUDIO TC VU-PANEL	J01	INB-07	6	M	56	01	02	CONN. AUDIO TO VU-PANEL
	0	A	75	02	01	CONN.	AUDIO BASIS UNITS	P02		6	A	73	02	15	CONN. AUDIO BASIS UNITS
INA-18	0	F	61	01	04	CONN.	AUDIO TC VU-PANEL	J01	INB-08	6	F	56	01	03	CONN. AUDIO TO VU-PANEL
	0	A	75	02	04	CONN.	AUDIO BASIS UNITS	P02		6	A	73	02	17	CONN. AUDIO BASIS UNITS
INA-19	0	M	62	01	01	CONN.	AUDIO TC VU-PANEL	J01	INB-C9	6	M	57	01	02	CONN. AUDIO TO VU-PANEL
	0	A	75	02	06	CONN.	AUDIO BASIS UNITS	P02		6	A	74	02	02	CONN. AUDIO BASIS UNITS
INA-20	0	F	62	01	04	CONN.	AUDIO TC VU-PANEL	J01	INB-10	6	F	57	01	03	CONN. AUDIO TC VU-PANEL
	0	A	75	02	08	CONN.	AUDIO BASIS UNITS	P02		6	A	74	02	05	CONN. AUDIO BASIS UNITS
INA-21	0	M	63	01	01	CONN.	AUDIO TO VU-PANEL	J01	INB-11	6	M	58	01	02	CONN. AUDIO TO VU-PANEL
	0	A	75	02	10	CONN.	AUDIO BASIS UNITS	P02		6	A	74	02	07	CONN. AUDIO BASIS UNITS
INA-22	0	F	63	01	04	CONN.	AUDIO TO VU-PANEL	J01	INB-12	6	F	58	01	03	CONN. AUDIO TC VU-PANEL
	0	A	75	02	12	CONN.	AUDIO BASIS UNITS	P02		6	A	74	02	09	CONN. AUDIO BASIS UNITS
INA-23	0	M	64	01	01	CONN.	AUDIO TO VU-PANEL	J01	INB-13	6	M	59	01	02	CONN. AUDIO TC VU-PANEL
	0	A	75	02	14	CONN.	AUDIO BASIS UNITS	P02		6	A	74	02	11	CONN. AUDIO BASIS UNITS
INA-24	0	F	64	01	04	CONN.	AUDIO TO VU-PANEL	J01	INB-14	6	F	59	01	03	CONN. AUDIO TC VU-PANEL
	0	A	75	02	16	CONN.	AUDIO BASIS UNITS	P02		6	A	74	02	13	CONN. AUDIO BASIS UNITS
INB -XY			92	01	18B	RECORD	AMP. CH XY	P01							
INB -01	6	V	76	02	03	ATTENUATOR	BOARD CH01								

SIG.NAME	COLOR	TYPE	GR	EL	PT	S	DESCRIPTION OF ELEMENT	SIG.NAME	COLOR	TYPE	GR	EL	PT	S	DESCRIPTION OF ELEMENT
INB-15	6	M	60	01	02	CONN.	AUDIO TO VU-PANEL	J01	INSA-C2	0	A	73	03	04	CONN. AUDIO LINE IN / CUT
	6	A	74	02	15	CONN.	AUDIO BASIS UNITS	P02		0	L	73	03	02	CONN. XLR INPUT CHC2
INB-16	6	F	60	01	03	CONN.	AUDIO TC VU-PANEL	J01	INSA-C3	0	A	73	03	06	CONN. AUDIO LINE IN / CUT
	6	A	74	02	17	CONN.	AUDIO BASIS UNITS	P02		0	L	73	03	02	CONN. XLR INPUT CH03
INB-17	6	M	61	01	02	CONN.	AUDIO TO VU-PANEL	J01	INSA-C4	0	A	73	03	08	CONN. AUDIO LINE IN / OUT
	6	A	75	02	02	CONN.	AUDIO BASIS UNITS	P02		0	L	73	03	02	CONN. XLR INPUT CH04
INB-18	6	F	61	01	03	CONN.	AUDIO TO VU-PANEL	J01	INSA-C5	0	A	73	03	10	CONN. AUDIO LINE IN / CUT
	6	A	75	02	05	CONN.	AUDIO BASIS UNITS	P02		0	L	73	03	02	CONN. XLR INPUT CH05
INB-19	6	M	62	01	02	CONN.	AUDIO TO VU-PANEL	J01	INSA-06	0	A	73	03	12	CONN. AUDIO LINE IN / CUT
	6	A	75	02	07	CONN.	AUDIO BASIS UNITS	P02		0	L	73	03	02	CONN. XLR INPUT CH06
INB-20	6	F	62	01	03	CONN.	AUDIO TC VU-PANEL	J01	INSA-07	0	A	73	03	14	CONN. AUDIO LINE IN / CUT
	6	A	75	02	09	CONN.	AUDIO BASIS UNITS	P02		0	L	73	03	02	CONN. XLR INPUT CH07
INB-21	6	M	63	01	02	CONN.	AUDIO TO VU-PANEL	J01	INSA-C8	0	A	73	03	16	CONN. AUDIO LINE IN / CUT
	6	A	75	02	11	CONN.	AUDIO BASIS UNITS	P02		0	L	73	03	02	CONN. XLR INPUT CHC8
INB-22	6	F	63	01	03	CONN.	AUDIO TC VU-PANEL	J01	INSA-09	0	A	74	03	01	CONN. AUDIO LINE IN / CUT
	6	A	75	02	13	CONN.	AUDIO BASIS UNITS	P02		0	A	74	03	04	CONN. AUDIO LINE IN / CUT
INB-23	6	M	64	01	02	CONN.	AUDIO TC VU-PANEL	J01	INSA-10	0	A	74	03	06	CONN. AUDIO LINE IN / CUT
	6	A	75	02	15	CONN.	AUDIO BASIS UNITS	P02		0	A	74	03	06	CONN. AUDIO LINE IN / CUT
INB-24	6	F	64	01	03	CONN.	AUDIO TC VU-PANEL	J01	INSA-12	0	A	74	03	08	CONN. AUDIO LINE IN / CUT
	6	A	75	02	17	CONN.	AUDIO BASIS UNITS	P02		0	A	74	03	10	CONN. AUDIO LINE IN / CUT
INSA -01	0	V	76	02	08	ATTENUATOR	BOARD CH01		INSA-14	0	A	74	03	12	CONN. AUDIO LINE IN / CUT
	0	V	76	02	09	ATTENUATOR	BOARD CH01								
INSA -02	0	V	77	02	08	ATTENUATOR	BOARD CH02		INSA-15	0	A	74	03	14	CONN. AUDIO LINE IN / CUT
	0	V	77	02	09	ATTENUATOR	BOARD CH02								
INSA -03	0	V	78	02	08	ATTENUATOR	BOARD CH03		INSA-16	0	A	74	03	16	CONN. AUDIO LINE IN / CUT
	0	V	78	02	09	ATTENUATOR	BOARD CH03								
INSA -04	0	V	79	02	08	ATTENUATOR	BOARD CH04		INSA-17	0	A	75	03	01	CONN. AUDIO LINE IN / CUT
	0	V	79	02	09	ATTENUATOR	BOARD CH04								
INSA -05	0	V	80	02	08	ATTENUATOR	BOARD CH05		INSA-18	0	A	75	03	04	CONN. AUDIO LINE IN / CUT
	0	V	80	02	09	ATTENUATOR	BOARD CH05								
INSA -06	0	V	81	02	08	ATTENUATOR	BOARD CH06		INSA-19	0	A	75	03	06	CONN. AUDIO LINE IN / OUT
	0	V	81	02	09	ATTENUATOR	BOARD CH06								
INSA -07	0	V	82	02	08	ATTENUATOR	BOARD CH07		INSA-20	0	A	75	03	08	CONN. AUDIO LINE IN / CUT
	0	V	82	02	09	ATTENUATOR	BOARD CH07								
INSA -08	0	V	83	02	08	ATTENUATOR	BOARD CH08		INSA-21	0	A	75	03	10	CONN. AUDIO LINE IN / CUT
	0	V	83	02	09	ATTENUATOR	BOARD CH08								
INSA-01	0	A	73	03	01	CONN.	AUDIO LINE IN / OUT	P03	INSA-22	0	A	75	03	12	CONN. AUDIO LINE IN / CUT
	0	L	73	31	02	CONN.	XLR INPUT CH01	J31							
									INSE -01	6	V	76	02	06	ATTENUATOR BOARD CHC1
										6	V	76	02	07	ATTENUATOR BOARD CH01

SIG.NAME	CCLR	TYPE	GR	EL	PT	S	DESCRIPTION OF ELEMENT	SIG.NAME	COLOR	TYPE	GR	EL	PT	S	DESCRIPTION OF ELEMENT
OUTS1B17	6	A	75	03	35		CONN. AUDIO LINE IN / OUT P03	(CCNT.)			82	06	02		CCNECTION BOARD OUT2 CH07 J201
OUTS1B18	6	A	75	03	37		CONN. AUDIO LINE IN / CUT P03	OUTS2A08	0	A	73	03	32		CONN. AUDIO LINE IN / OUT P03
OUTS1B19	6	A	75	03	39		CONN. AUDIO LINE IN / OUT P03		C	L	73	28	02		CCNN. XLR OUT 2 CHC8 P28
OUTS1B20	6	A	75	03	41		CONN. AUDIO LINE IN / CUT P03		0	V	83	04	08		TRANSF. CCNN. BCARD CUT2 CH08
OUTS1B21	6	A	75	03	43		CCNN. AUDIO LINE IN / CUT P03		0	V	83	04	09		TRANSF. CCNN. BCARD CUT2 CH08
OUTS1B22	6	A	75	03	45		CONN. AUDIO LINE IN / OUT PC3				83	06	02		CCNECTION BOARD OUT2 CH08 J2C1
OUTS1B23	6	A	75	03	47		CONN. AUDIO LINE IN / CUT P03	OUTS2A09	0	A	74	03	18		CONN. AUDIO LINE IN / CUT P03
OUTS1B24	6	A	75	03	50		CONN. AUDIO LINE IN / OUT P03	OUTS2A10	0	A	74	03	20		CCNN. AUDIO LINE IN / CUT P03
OUTS2A01	0	A	73	03	18		CONN. AUDIO LINE IN / CUT P03	OUTS2A11	0	A	74	03	22		CONN. AUDIO LINE IN / CUT PC3
	0	L	73	21	02		CONN. XLR OUT 2 CH01 P21	OUTS2A12	0	A	74	03	24		CCNN. AUDIO LINE IN / CUT PC3
	0	V	76	04	08		TRANSF. CCNN. BCARD CUT2 CH01	OUTS2A13	0	A	74	03	26		CONN. AUDIO LINE IN / CUT PC3
	0	V	76	04	09		TRANSF. CCNN. BCARD CUT2 CH01	OUTS2A14	0	A	74	03	28		CONN. AUDIO LINE IN / CUT P03
			76	06	02		CCNECTION BOARD OUT2 CHC1 J201	OUTS2A15	0	A	74	03	30		CCNN. AUDIO LINE IN / CUT PC3
OUTS2A02	0	A	73	03	20		CONN. AUDIO LINE IN / CUT P03	OUTS2A16	0	A	74	03	32		CONN. AUDIO LINE IN / CUT PC3
	0	L	73	22	02		CONN. XLR OUT 2 CH02 P22	OUTS2A17	C	A	75	03	18		CCNN. AUDIO LINE IN / CUT P03
	0	V	77	04	08		TRANSF. CCNN. BCARD CUT2 CH02	OLTS2A18	C	A	75	03	20		CCNN. AUDIO LINE IN / CUT PC3
	0	V	77	04	09		TRANSF. CCNN. BCARD CUT2 CH02	OUTS2A19	0	A	75	03	22		CONN. AUDIO LINE IN / CUT P03
			77	06	02		CCNECTION BOARD OUT2 CH02 J2C1	OUTS2A20	C	A	75	03	24		CCNN. AUDIO LINE IN / CUT P03
OUTS2A03	0	A	73	03	22		CONN. AUDIO LINE IN / CUT P03	CUTS2A21	0	A	75	03	26		CCNN. AUDIO LINE IN / CUT PC3
	0	L	73	23	02		CONN. XLR OUT 2 CHC2 P23	OUTS2A22	0	A	75	03	28		CONN. AUDIO LINE IN / CUT PC3
	0	V	78	04	08		TRANSF. CCNN. BCARD OUT2 CH03	OUTS2A23	C	A	75	03	30		CCNN. AUDIO LINE IN / CUT PC3
	0	V	78	04	09		TRANSF. CCNN. BCARD CUT2 CH03	OUTS2A24	0	A	75	03	32		CONN. AUDIO LINE IN / CUT PC3
			78	06	02		CCNECTION BOARD OUT2 CHC3 J2C1	OUTS2B01	6	A	73	03	19		CCNN. AUDIO LINE IN / CUT P03
OUTS2A04	0	A	73	03	24		CONN. AUDIO LINE IN / CUT P03		6	L	73	21	03		CONN. XLR OUT 2 CHC1 P21
	0	L	73	24	02		CONN. XLR OUT 2 CH04 P24		6	V	76	04	06		TRANSF. CCNN. BCARD OUT2 CH01
	0	V	79	04	08		TRANSF. CCNN. BCARD CUT2 CHC4		6	V	76	04	07		TRANSF. CCNN. BCARD CUT2 CH01
	0	V	79	04	09		TRANSF. CCNN. BCARD CUT2 CH04		6	V	76	06	01		CCNECTION BOARD OUT2 CH01 J201
			79	06	02		CCNECTION BOARD OUT2 CHC4 J201	OUTS2B02	6	A	73	03	21		CCNN. AUDIO LINE IN / CUT P03
OUTS2A05	0	A	73	03	26		CONN. AUDIO LINE IN / OUT P03		6	L	73	22	03		CONN. XLR OUT 2 CHC2 P22
	0	L	73	25	02		CONN. XLR OUT 2 CH05 P25		6	V	77	04	06		TRANSF. CCNN. BCARD OUT2 CH02
	0	V	80	04	08		TRANSF. CCNN. BCARD CUT2 CH05		6	V	77	04	07		TRANSF. CCNN. BCARD CUT2 CH02
	0	V	80	04	09		TRANSF. CCNN. BCARD CUT2 CH05		6	V	77	06	01		CCNECTION BOARD OUT2 CH02 J2C1
			80	06	02		CCNECTION BOARD OUT2 CHC5 J201	OUTS2B03	6	A	73	03	23		CONN. AUDIO LINE IN / CUT P03
OUTS2A06	0	A	73	03	28		CONN. AUDIO LINE IN / OUT P03		6	L	73	23	03		CONN. XLR OUT 2 CHC3 P23
	0	L	73	26	02		CONN. XLR OUT 2 CH06 P26		6	V	78	04	06		TRANSF. CCNN. BCARD OUT2 CH03
	0	V	81	04	08		TRANSF. CCNN. BCARD CUT2 CH06		6	V	77	04	07		TRANSF. CCNN. BCARD CUT2 CH02
	0	V	81	04	09		TRANSF. CCNN. BCARD OUT2 CH06				77	06	01		CCNECTION BOARD OUT2 CH02 J2C1
			81	06	02		CCNECTION BOARD OUT2 CH06 J201	OUTS2B04	6	A	75	03	27		CONN. AUDIO LINE IN / CUT P03
OUTS2A07	0	A	73	03	30		CONN. AUDIO LINE IN / OUT P03	OUTS2B21	6	A	75	03	27		CONN. AUDIO LINE IN / CUT P03
	0	L	73	27	02		CCNN. XLR OUT 2 CH07 P27	OUTS2B22	6	A	75	03	29		CCNN. AUDIO LINE IN / CUT PC3
	0	V	82	04	08		TRANSF. CCNN. BCARD CUT2 CH07	OUTS2B23	6	A	75	03	31		CONN. AUDIO LINE IN / CUT PC3
	0	V	82	04	09		TRANSF. CCNN. BCARD CUT2 CH07	OUTS2B24	6	A	75	03	33		CCNN. AUDIO LINE IN / CUT P03
							./.	OUT1A-XY			90	01	17A		REPRCDUCE AMP. CH XY PC1
							./.	OUT1A-01	0	M	53	01	13		CONN. AUDIO TC VU-PANEL J01
							./.		0	A	73	02	34		CCNN. AUDIO BASIS UNITS PC2
							./.		0	V	76	03	02		TRANSF. CCNN. BCARD OUT1 CH01
							./.				76	05	10		CCNECTION BOARD CUT1 CH01 J101
							./.	OUT1A-C2	0	F	53	01	16		CCNN. AUDIO TO VU-PANEL J01
							./.		0	A	73	02	36		CCNN. AUDIO BASIS UNITS P02
							./.		0	V	77	03	02		TRANSF. CCNN. BCARD OUT1 CH02
							./.				77	05	10		CCNECTION BOARD CUT1 CH02 J1C1
OUTS2B07	6	A	73	03	31		CONN. AUDIO LINE IN / CUT P03	CUT1A-03	0	M	54	01	13		CONN. AUDIO TO VU-PANEL JC1
	6	L	73	27	03		CONN. XLR OUT 2 CH07 P27		0	A	73	02	38		CCNN. AUDIO BASIS UNITS PC2
	6	V	82	04	06		TRANSF. CCNN. BCARD OUT2 CH07		0	V	78	03	02		TRANSF. CCNN. BCARD CUT1 CH03
	6	V	82	04	07		TRANSF. CCNN. BCARD CUT2 CH07				78	05	10		CCNECTION BOARD OUT1 CH03 J101
			82	06	01		CCNECTION BOARD OUT2 CHC7 J201	OUT1A-C4	C	F	54	01	16		CCNN. AUDIO TC VU-PANEL J01
OUTS2B08	6	A	73	03	33		CONN. AUDIO LINE IN / CUT P03		0	A	73	02	40		CCNN. AUDIO BASIS UNITS PC2
	6	L	73	28	03		CONN. XLR OUT 2 CH08 P28		0	V	79	03	02		TRANSF. CCNN. BCARD OUT1 CH04
	6	V	83	04	06		TRANSF. CCNN. BCARD CUT2 CH08				79	05	10		CCNECTION BOARD CUT1 CH04 J101
	6	V	83	04	07		TRANSF. CCNN. BCARD CUT2 CH08	OUT1A-C5	C	M	55	01	13		CCNN. AUDIO TO VU-PANEL J01
			83	06	01		CCNECTION BOARD OUT2 CHC8 J201		0	A	73	02	42		CCNN. AUDIO BASIS UNITS P02
OUTS2B09	6	A	74	03	19		CONN. AUDIO LINE IN / CUT P03		0	V	80	03	02		TRANSF. CCNN. BCARD OUT1 CH05
OUTS2B10	6	A	74	03	21		CONN. AUDIO LINE IN / CUT P03				80	05	10		CCNECTION BOARD CUT1 CH05 J1C1
OUTS2B11	6	A	74	03	23		CONN. AUDIO LINE IN / CUT PC3	CUT1A-06	0	F	55	01	16		CCNN. AUDIO TO VU-PANEL JC1
OUTS2B12	6	A	74	03	25		CONN. AUDIO LINE IN / CUT P03		0	A	73	02	44		CCNN. AUDIO BASIS UNITS PC2
OUTS2B13	6	A	74	03	27		CONN. AUDIO LINE IN / OUT P03		0	V	81	03	02		TRANSF. CCNN. BCARD CUT1 CH06
OUTS2B14	6	A	74	03	29		CONN. AUDIO LINE IN / CUT P03				81	05	10		CCNECTION BOARD OUT1 CH06 J1C1
OUTS2B15	6	A	74	03	31		CONN. AUDIO LINE IN / CUT P03	OUT1A-C7	0	M	56	01	13		CCNN. AUDIO TC VU-PANEL J01
OUTS2B16	6	A	74	03	33		CONN. AUDIO LINE IN / OUT P03		0	A	73	02	46		CCNN. AUDIO BASIS UNITS PC2
OUTS2B17	6	A	75	03	19		CONN. AUDIO LINE IN / CUT P03		0	V	82	03	02		TRANSF. CCNN. BCARD OUT1 CH07
OUTS2B18	6	A	75	03	21		CONN. AUDIO LINE IN / OUT P03				82	05	10		CCNECTION BOARD CUT1 CH07 J101
OUTS2B19	6	A	75	03	23		CONN. AUDIO LINE IN / OUT P03	CUT1A-C8	0	F	56	01	16		CCNN. AUDIO TO VU-PANEL JC1
OUTS2B20	6	A	75	03	25		CONN. AUDIO LINE IN / OUT P03		0	A	73	02	49		CCNN. AUDIO BASIS UNITS P02
							./.		0	V	83	03	02		TRANSF. CCNN. BCARD CUT1 CH08
							./.				83	05	10		CCNECTION BOARD OUT1 CH08 J101
							./.	OUT1A-09	0	M	57	01	13		CONN. AUDIO TO VU-PANEL J01
							./.		0	A	74	02	34		CCNN. AUDIO BASIS UNITS PC2
							./.	OUT1A-10	0	F	57	01	16		CONN. AUDIO TO VU-PANEL J01
							./.		0	A	74	02	36		CCNN. AUDIO BASIS UNITS P02

SIG.NAME	COLOR	TYPE	GR	EL	PT	S	DESCRIPTION OF ELEMENT	SIG.NAME	COLOR	TYPE	GR	EL	PT	S	DESCRIPTION OF ELEMENT				
(CCNT.)			78	06	01		CONNECTION BOARD OUT2 CH03 J201	CUTS2B21	6	A	75	03	27		CONN. AUDIO LINE IN / CUT P03				
OUTS2B04	6	A	73	03	25		CONN. AUDIO LINE IN / CUT P03	OUTS2B22	6	A	75	03	29		CCNN. AUDIO LINE IN / CUT PC3				
	6	L	73	24	03		CONN. XLR OUT 2 CH04 P24		OUTS2B23	6	A	75	03	31		CONN. AUDIO LINE IN / CUT PC3			
	6	V	79	04	06		TRANSF. CCNN. BCARD CUT2 CH04			OUTS2B24	6	A	75	03	33		CCNN. AUDIO LINE IN / CUT P03		
	6	V	79	04	07		TRANSF. CCNN. BCARD OUT2 CH04				OUT1A-XY			90	01	17A		REPRCDUCE AMP. CH XY PC1	
		79	06	01		CONNECTION BOARD OUT2 CHC4 J201	OUT1A-01	0				M	53	01	13		CONN. AUDIO TC VU-PANEL J01		
OUTS2B05	6	A	73	03	27			CONN. AUDIO LINE IN / CUT P03	0			A	73	02	34		CONN. AUDIO BASIS UNITS PC2		
	6	L	73	25	03			CONN. XLR OUT 2 CH05 P25		0		V	76	03	02		TRANSF. CCNN. BCARD OUT1 CH01		
	6	V	80	04	06			TRANSF. CCNN. BCARD CUT2 CH05			0		76	05	10		CONNECTION BOARD CUT1 CH01 J101		
	6	V	80	04	07		TRANSF. CCNN. BCARD CUT2 CH05	OUT1A-C2				0	F	53	01	16		CCNN. AUDIO TO VU-PANEL J01	
		80	06	01		CONNECTION BOARD OUT2 CH05 J201	0		A			73	02	36		CCNN. AUDIO BASIS UNITS P02			
OUTS2B06	6	A	73	03	29				CONN. AUDIO LINE IN / CUT P03	0		V	77	03	02		TRANSF. CCNN. BCARD OUT1 CH02		
	6	L	73	26	03				CONN. XLR OUT 2 CH06 P26		0		77	05	10		CONNECTION BOARD CUT1 CH02 J1C1		
	6	V	81	04	06			TRANSF. CCNN. BCARD OUT2 CH06	OUT1A-03			0	M	54	01	13		CONN. AUDIO TO VU-PANEL JC1	
	6	V	81	04	07		TRANSF. CCNN. BCARD CUT2 CH06	0				A	73	02	38		CCNN. AUDIO BASIS UNITS PC2		
		81	06	01		CONNECTION BOARD OUT2 CHC6 J201	0			V		78	03	02		TRANSF. CCNN. BCARD CUT1 CH03			
OUTS2B07	6	A	73	03	31					CONN. AUDIO LINE IN / CUT P03	0		78	05	10		CONNECTION BOARD OUT1 CH03 J101		
	6	L	73	27	03				CONN. XLR OUT 2 CH07 P27	OUT1A-C4		0	F	54	01	16		CCNN. AUDIO TC VU-PANEL J01	
	6	V	82	04	06			TRANSF. CCNN. BCARD OUT2 CH07	0			A	73	02	40		CCNN. AUDIO BASIS UNITS PC2		
	6	V	82	04	07		TRANSF. CCNN. BCARD CUT2 CH07	0				V	79	03	02		TRANSF. CCNN. BCARD OUT1 CH04		
		82	06	01		CONNECTION BOARD OUT2 CHC7 J201	OUT1A-C5				0	M	55	01	13		CCNN. AUDIO TO VU-PANEL JC1		
OUTS2B08	6	A	73	03	33					CONN. AUDIO LINE IN / CUT P03	0	A	73	02	42		CCNN. AUDIO BASIS UNITS P02		
	6	L	73	28	03				CONN. XLR OUT 2 CH08 P28	0		V	80	03	02		TRANSF. CCNN. BCARD OUT1 CH05		
	6	V	83	04	06			TRANSF. CCNN. BCARD CUT2 CH08	0				80	05	10		CONNECTION BOARD CUT1 CH05 J1C1		
	6	V	83	04	07		TRANSF. CCNN. BCARD OUT2 CH08	CUT1A-06				0	F	55	01	16		CCNN. AUDIO TO VU-PANEL JC1	
		83	06	01		CONNECTION BOARD OUT2 CHC8 J201	0				A	73	02	44		CCNN. AUDIO BASIS UNITS PC2			
OUTS2B09	6	A	74	03	19					CONN. AUDIO LINE IN / CUT P03	0	V	81	03	02		TRANSF. CCNN. BCARD OUT1 CH06		
	OUTS2B10	6	A	74	03	21				CONN. AUDIO LINE IN / OUT P03		0		81	05	10		CONNECTION BOARD CUT1 CH06 J1C1	
		OUTS2B11	6	A	74	03		23		CONN. AUDIO LINE IN / CUT PC3			OUT1A-C7	0	M	56	01	13	
			OUTS2B12	6	A	74	03	25		CONN. AUDIO LINE IN / CUT P03				0	A	73	02	46	
OUTS2B13				6	A	74	03	27		CONN. AUDIO LINE IN / OUT P03	0				V	82	03	02	
	OUTS2B14			6	A	74	03	29		CONN. AUDIO LINE IN / CUT P03		0				82	05	10	
		OUTS2B15		6	A	74	03	31		CONN. AUDIO LINE IN / CUT P03			CUT1A-C8		0	F	56	01	16
			OUTS2B16	6	A	74	03	33		CONN. AUDIO LINE IN / OUT P03				0	A	73	02	49	
OUTS2B17				6	A	75	03	19		CONN. AUDIO LINE IN / CUT P03	0				V	83	03	02	
	OUTS2B18			6	A	75	03	21		CONN. AUDIO LINE IN / OUT P03		0				83	05	10	
		OUTS2B19		6	A	75	03	23		CONN. AUDIO LINE IN / OUT P03			OUT1A-09		0	M	57	01	13
			OUTS2B20	6	A	75	03	25		CONN. AUDIO LINE IN / OUT P03				0	A	74	02	34	
OUTS2B21				6	A	75	03	27		CONN. AUDIO LINE IN / OUT P03	0				F	57	01	16	
	OUTS2B22			6	A	75	03	29		CONN. AUDIO LINE IN / OUT P03		0			A	74	02	36	
		OUTS2B23		6	A	75	03	31		CONN. AUDIO LINE IN / OUT P03			0			74	03	38	
			OUTS2B24	6	A	75	03	33		CONN. AUDIO LINE IN / OUT P03				0		74	05	10	
OUTS2B25				6	A	75	03	35		CONN. AUDIO LINE IN / OUT P03	0					74	07	12	
	OUTS2B26			6	A	75	03	37		CONN. AUDIO LINE IN / OUT P03		0				74	09	14	
		OUTS2B27		6	A	75	03	39		CONN. AUDIO LINE IN / OUT P03			0			74	11	16	
			OUTS2B28	6	A	75	03	41		CONN. AUDIO LINE IN / OUT P03				0		74	13	18	
OUTS2B29				6	A	75	03	43		CONN. AUDIO LINE IN / OUT P03	0					74	15	20	
	OUTS2B30			6	A	75	03	45		CONN. AUDIO LINE IN / OUT P03		0				74	17	22	
		OUTS2B31		6	A	75	03	47		CONN. AUDIO LINE IN / OUT P03			0			74	19	24	
			OUTS2B32	6	A	75	03	49		CONN. AUDIO LINE IN / OUT P03				0		74	21	26	
OUTS2B33				6	A	75	03	51		CONN. AUDIO LINE IN / OUT P03	0					74	23	28	
	OUTS2B34			6	A	75	03	53		CONN. AUDIO LINE IN / OUT P03		0				74	25	30	
		OUTS2B35		6	A	75	03	55		CONN. AUDIO LINE IN / OUT P03			0			74	27	32	
			OUTS2B36	6	A	75	03	57		CONN. AUDIO LINE IN / OUT P03				0		74	29	34	
OUTS2B37				6	A	75	03	59		CONN. AUDIO LINE IN / OUT P03	0					74	31	36	
	OUTS2B38			6	A	75	03	61		CONN. AUDIO LINE IN / OUT P03		0				74	33	38	
		OUTS2B39		6	A	75	03	63		CONN. AUDIO LINE IN / OUT P03			0			74	35	40	
			OUTS2B40	6	A	75	03	65		CONN. AUDIO LINE IN / OUT P03				0		74	37	42	
OUTS2B41				6	A	75	03	67		CONN. AUDIO LINE IN / OUT P03	0					74	39	44	
	OUTS2B42			6	A	75	03	69		CONN. AUDIO LINE IN / OUT P03		0				74	41	46	
		OUTS2B43		6	A	75	03	71		CONN. AUDIO LINE IN / OUT P03			0			74	43	48	
			OUTS2B44	6	A	75	03	73		CONN. AUDIO LINE IN / OUT P03				0		74	45	50	
OUTS2B45				6	A	75	03	75		CONN. AUDIO LINE IN / OUT P03	0					74	47	52	
	OUTS2B46			6	A	75	03	77		CONN. AUDIO LINE IN / OUT P03		0				74	49	54	
		OUTS2B47		6	A	75	03	79		CONN. AUDIO LINE IN / OUT P03			0			74	51	56	
			OUTS2B48	6	A	75	03	81		CONN. AUDIO LINE IN / OUT P03				0		74	53	58	
OUTS2B49				6	A	75	03	83		CONN. AUDIO LINE IN / OUT P03	0					74	55	60	
	OUTS2B50			6	A	75	03	85		CONN. AUDIO LINE IN / OUT P03		0				74	57	62	
		OUTS2B51		6	A	75	03	87		CONN. AUDIO LINE IN / OUT P03			0			74	59	64	
			OUTS2B52	6	A	75	03	89		CONN. AUDIO LINE IN / OUT P03				0		74	61	66	
OUTS2B53				6	A	75	03	91		CONN. AUDIO LINE IN / OUT P03	0					74	63	68	
	OUTS2B54			6	A	75	03	93		CONN. AUDIO LINE IN / OUT P03		0				74	65	70	
		OUTS2B55		6	A	75	03	95		CONN. AUDIO LINE IN / OUT P03			0			74	67	72	
			OUTS2B56	6	A	75	03	97		CONN. AUDIO LINE IN / OUT P03				0		74	69	74	
OUTS2B57				6	A	75	03	99		CONN. AUDIO LINE IN / OUT P03	0					74	71	76	
	OUTS2B58			6	A	75	03	101		CONN. AUDIO LINE IN / OUT P03		0				74	73	78	
		OUTS2B59		6	A	75	03	103		CONN. AUDIO LINE IN / OUT P03			0			74	75	80	
			OUTS2B60	6	A	75	03	105		CONN. AUDIO LINE IN / OUT P03				0		74	77	82	
OUTS2B61				6	A	75	03	107		CONN. AUDIO LINE IN / OUT P03	0					74	79	84	
	OUTS2B62			6	A	75	03	109		CONN. AUDIO LINE IN / OUT P03		0				74	81	86	
		OUTS2B63		6	A	75	03	111		CONN. AUDIO LINE IN / OUT P03			0			74	83	88	
			OUTS2B64	6	A	75	03	113		CONN. AUDIO LINE IN / OUT P03				0		74	85	90	
OUTS2B65				6	A	75	03	115		CONN. AUDIO LINE IN / OUT P03	0					74	87	92	
	OUTS2B66			6	A	75	03	117		CONN. AUDIO LINE IN / OUT P03		0				74	89	94	
		OUTS2B67		6	A	75	03	119		CONN. AUDIO LINE IN / OUT P03			0			74	91	96	
			OUTS2B68	6	A	75	03	121		CONN. AUDIO LINE IN / OUT P03				0		74	93	98	
OUTS2B69				6	A	75	03	123		CONN. AUDIO LINE IN / OUT P03	0					74	95	100	
	OUTS2B70			6	A	75	03	125		CONN. AUDIO LINE IN / OUT P03		0				74	97	102	
		OUTS2B71		6	A	75	03	127		CONN. AUDIO LINE IN / OUT P03			0			74	99	104	
			OUTS2B72	6	A	75	03	129		CONN. AUDIO LINE IN / OUT P03				0		74	101	106	
OUTS2B73				6	A	75	03	131		CONN. AUDIO LINE IN / OUT P03	0					74	103	108	
	OUTS2B74			6	A	75	03	133		CONN. AUDIO LINE IN / OUT P03		0				74	105	110	
		OUTS2B75		6	A	75	03	135		CONN. AUDIO LINE IN / OUT P03			0			74	107	112	
			OUTS2B76	6	A	75	03	137		CONN. AUDIO LINE IN / OUT P03				0		74	109	114	
OUTS2B77				6	A	75	03	139		CONN. AUDIO LINE IN / OUT P03	0					74	111	116	
	OUTS2B78			6	A	75	03	141		CONN. AUDIO LINE IN / OUT P03		0				74	113	118	
		OUTS2B79		6	A	75	03	143		CONN. AUDIO LINE IN / OUT P03			0			74	115	120	
			OUTS2B80	6	A	75	03	145		CONN. AUDIO LINE IN / OUT P03				0		74	117	122	
OUTS2B81				6	A	75	03	147		CONN. AUDIO LINE IN / OUT P03	0					74	119	124	
	OUTS2B82			6	A	75	03	149		CONN. AUDIO LINE IN / OUT P03		0				74	121	126	
		OUTS2B83		6	A	75	03	151		CONN. AUDIO LINE IN / OUT P03			0			74	123	128	
			OUTS2B84	6	A	75	03												

SIG.NAME	COLOR	TYPE	GR	EL	PT	S	DESCRIPTION OF ELEMENT	SIG.NAME	COLOR	TYPE	GR	EL	PT	S	DESCRIPTION OF ELEMENT
OUT1A-11	0	M	58	01	13		CONN. AUDIO TC VU-PANEL	J01	CUT1B-C3	6	M	54	C1	14	CONN. AUDIO TO VU-PANEL
	0		74	02	38		CONN. AUDIO BASIS UNITS	P02		6	A	73	C2	39	CONN. AUDIO BASIS UNITS
										6	V	78	C3	03	TRANSF. CCNN. BCARD CUT1 CH03
OUT1A-12	0	F	58	01	16		CONN. AUDIO TC VU-PANEL	J01				78	C5	08	CONNECTION BOARD CUT1 CH03
	0	A	74	02	40		CONN. AUDIO BASIS UNITS	P02				78	C5	09	CONNECTION BOARD CUT1 CH03
OUT1A-13	0	M	59	01	13		CONN. AUDIO TC VU-PANEL	J01	CUT1B-04	6	F	54	01	15	CONN. AUDIO TO VU-PANEL
	0		74	02	42		CONN. AUDIO BASIS UNITS	P02		6	A	73	02	41	CONN. AUDIO BASIS UNITS
OUT1A-14	0	F	59	01	16		CONN. AUDIO TC VU-PANEL	J01		6	V	79	03	03	TRANSF. CCNN. BCARD CUT1 CH04
	0	A	74	02	44		CONN. AUDIO BASIS UNITS	P02				79	C5	08	CONNECTION BOARD CUT1 CH04
												79	C5	09	CONNECTION BOARD CUT1 CH04
OUT1A-15	0	M	60	01	13		CONN. AUDIO TC VU-PANEL	J01	OUT1B-C5	6	M	55	01	14	CONN. AUDIO TC VU-PANEL
	0		74	02	46		CONN. AUDIO BASIS UNITS	P02		6	A	73	02	43	CONN. AUDIO BASIS UNITS
OUT1A-16	0	F	60	01	16		CONN. AUDIO TC VU-PANEL	J01		6	V	80	03	03	TRANSF. CCNN. BCARD CUT1 CH05
	0	A	74	02	49		CONN. AUDIO BASIS UNITS	P02				80	C5	08	CONNECTION BOARD CUT1 CH05
												80	C5	09	CONNECTION BOARD CUT1 CH05
OUT1A-17	0	M	61	01	13		CONN. AUDIO TC VU-PANEL	J01	OUT1B-C6	6	F	55	01	15	CONN. AUDIO TC VU-PANEL
	0	A	75	02	34		CONN. AUDIO BASIS UNITS	P02		6	A	73	C2	45	CONN. AUDIO BASIS UNITS
										6	V	81	03	03	TRANSF. CCNN. BCARD CUT1 CH06
OUT1A-18	0	F	61	01	16		CONN. AUDIO TC VU-PANEL	J01				81	C5	08	CONNECTION BOARD CUT1 CH06
	0	A	75	02	36		CONN. AUDIO BASIS UNITS	P02				81	C5	09	CONNECTION BOARD CUT1 CH06
	6	A	75	02	37		CONN. AUDIO BASIS UNITS	P02	CUT1B-C7	6	M	56	01	14	CONN. AUDIO TC VU-PANEL
OUT1A-19	0	M	62	01	13		CONN. AUDIO TC VU-PANEL	J01		6	A	73	C2	48	CONN. AUDIO BASIS UNITS
	0		75	02	38		CONN. AUDIO BASIS UNITS	P02		6	V	82	03	03	TRANSF. CCNN. BCARD CUT1 CH07
												82	C5	08	CONNECTION BOARD CUT1 CH07
OUT1A-20	0	F	62	01	16		CONN. AUDIO TC VU-PANEL	J01				82	C5	09	CONNECTION BOARD CUT1 CH07
	0	A	75	02	40		CONN. AUDIO BASIS UNITS	P02	OUT1B-C8	6	F	56	01	15	CONN. AUDIO TC VU-PANEL
OUT1A-21	0	M	63	01	13		CONN. AUDIO TC VU-PANEL	J01		6	A	73	C2	50	CONN. AUDIO BASIS UNITS
	0	A	75	02	42		CONN. AUDIO BASIS UNITS	P02		6	V	83	03	03	TRANSF. CCNN. BCARD CUT1 CH08
												83	C5	08	CONNECTION BOARD CUT1 CH08
OUT1A-22	0	F	63	01	16		CONN. AUDIO TC VU-PANEL	J01				83	C5	09	CONNECTION BOARD CUT1 CH08
	0	A	75	02	44		CONN. AUDIO BASIS UNITS	P02	OUT1B-C9	6	M	57	01	14	CONN. AUDIO TC VU-PANEL
OUT1A-23	0	M	64	01	13		CONN. AUDIO TC VU-PANEL	J01		6	A	74	C2	35	CONN. AUDIO BASIS UNITS
	0	A	75	02	46		CONN. AUDIO BASIS UNITS	P02	OUT1B-1C	6	F	57	01	15	CONN. AUDIO TC VU-PANEL
OUT1A-24	0	F	64	01	16		CONN. AUDIO TC VU-PANEL	J01		6	A	74	C2	37	CONN. AUDIO BASIS UNITS
	0	A	75	02	49		CONN. AUDIO BASIS UNITS	P02	OUT1B-11	6	M	58	01	14	CONN. AUDIO TC VU-PANEL
OUT1B-XY			90	01	18B		REPRODUCE AMP. CH XY	P01		6	A	74	C2	39	CONN. AUDIO BASIS UNITS
OUT1B-01	6	M	53	01	14		CONN. AUDIO TO VU-PANEL	J01	OUT1B-12	6	F	58	01	15	CONN. AUDIO TC VU-PANEL
	6	A	73	02	35		CONN. AUDIO BASIS UNITS	P02		6	A	74	C2	41	CONN. AUDIO BASIS UNITS
	6	V	76	03	03		TRANSF. CCNN. BCARD CUT1 CH01		CLT1B-13	6	M	59	01	14	CONN. AUDIO TC VU-PANEL
			76	05	08		CONNECTION BOARD CUT1 CH01	J101		6	A	74	02	43	CONN. AUDIO BASIS UNITS
			76	05	09		CONNECTION BOARD CUT1 CH01	J101	OUT1B-14	6	F	59	01	15	CONN. AUDIO TC VU-PANEL
OUT1B-02	6	F	53	01	15		CONN. AUDIO TO VU-PANEL	J01		6	A	74	C2	45	CONN. AUDIO BASIS UNITS
	6	A	73	02	37		CONN. AUDIO BASIS UNITS	P02	OUT1B-15	6	M	60	01	14	CONN. AUDIO TC VU-PANEL
	6	V	77	03	03		TRANSF. CCNN. BCARD CUT1 CH02			6	A	74	C2	48	CONN. AUDIO BASIS UNITS
			77	05	08		CONNECTION BOARD CUT1 CH02	J101							
			77	05	09		CONNECTION BOARD CUT1 CH02	J101							

SIG.NAME	COLOR	TYPE	GR	EL	PT	S	DESCRIPTION OF ELEMENT	SIG.NAME	COLOR	TYPE	GR	EL	PT	S	DESCRIPTION OF ELEMENT
OUT1B-16	6	F	60	01	15		CONN. AUDIO TC VU-PANEL	J01	(CCNT.)			81	06	10	CONNECTION BOARD CUT2 CH06
	6	A	74	02	50		CONN. AUDIO BASIS UNITS	P02	CUT2A-07	0	M	56	01	21	CONN. AUDIO TO VU-PANEL
OUT1B-17	6	M	61	01	14		CONN. AUDIO TC VU-PANEL	J01		0	A	73	02	30	CONN. AUDIO BASIS UNITS
	6	A	75	02	35		CONN. AUDIO BASIS UNITS	P02		0	V	82	C4	02	TRANSF. CCNN. BCARD CUT2 CH07
												82	C6	10	CONNECTION BOARD CUT2 CH07
OUT1B-18	6	F	61	01	15		CONN. AUDIO TC VU-PANEL	J01	OUT2A-C8	0	F	56	C1	24	CONN. AUDIO TO VU-PANEL
OUT1B-19	6	M	62	01	14		CONN. AUDIO TC VU-PANEL	J01		0	A	73	02	32	CONN. AUDIO BASIS UNITS
	6	A	75	02	39		CONN. AUDIO BASIS UNITS	P02		0	V	83	04	02	TRANSF. CCNN. BCARD CUT2 CH08
OUT1B-20	6	F	62	01	15		CONN. AUDIO TC VU-PANEL	J01				83	C6	10	CONNECTION BOARD CUT2 CH08
	6	A	75	02	41		CONN. AUDIO BASIS UNITS	P02	CLT2A-C9	0	M	57	C1	21	CONN. AUDIO TC VU-PANEL
OUT1B-21	6	M	63	01	14		CONN. AUDIO TC VU-PANEL	J01		0	A	74	C2	18	CONN. AUDIO BASIS UNITS
	6	A	75	02	43		CONN. AUDIO BASIS UNITS	P02	OUT2A-1C	0	F	57	C1	24	CONN. AUDIO TC VU-PANEL
OUT1B-22	6	F	63	01	15		CONN. AUDIO TC VU-PANEL	J01		0	A	74	C2	20	CONN. AUDIO BASIS UNITS
	6	A	75	02	45		CONN. AUDIO BASIS UNITS	P02	CLT2A-11	0	M	58	C1	21	CONN. AUDIO TC VU-PANEL
OUT1B-23	6	M	64	01	14		CONN. AUDIO TC VU-PANEL	J01		0	A	74	C2	22	CONN. AUDIO BASIS UNITS
	6	A	75	02	48		CONN. AUDIO BASIS UNITS	P02	OUT2A-12	0	F	58	C1	24	CONN. AUDIO TC VU-PANEL
OUT1B-24	6	F	64	01	15		CONN. AUDIO TC VU-PANEL	J01		0	A	74	C2	24	CONN. AUDIO BASIS UNITS
	6	A	75	02	50		CONN. AUDIO BASIS UNITS	P02	OUT2A-13	0	M	59	01	21	CONN. AUDIO TC VU-PANEL
OUT2A-XY			91	01	17A		SYNC. AMP. CHXY	P01		0	A	74	C2	26	CONN. AUDIO BASIS UNITS
OUT2A-01	0	M	53	01	21		CONN. AUDIO TC VU-PANEL	J01	CLT2A-14	0	F	59	C1	24	CONN. AUDIO TC VU-PANEL
	0	A	73	02	18		CONN. AUDIO BASIS UNITS	P02		0	A	74	C2	28	CONN. AUDIO BASIS UNITS
	0	V	76	04	02		TRANSF. CCNN. BCARD CUT2 CH01		CUT2A-15	0	M	60	01	21	CONN. AUDIO TC VU-PANEL
			76	06	10		CONNECTION BOARD CUT2 CH01	J201		0	A	74	C2	30	CONN. AUDIO BASIS UNITS
OUT2A-02	0	F	53	01	24		CONN. AUDIO TO VU-PANEL	J01	CLT2A-16	0	F	60	01	24	CONN. AUDIO TC VU-PANEL
	0	A	73	02	20		CONN. AUDIO BASIS UNITS	P02		0	A	74	C2	32	CONN. AUDIO BASIS UNITS
	0	V	77	04	02		TRANSF. CCNN. BCARD CUT2 CH02		OUT2A-17	0	M	61	01	21	CONN. AUDIO TC VU-PANEL
			77	06	10		CONNECTION BOARD CUT2 CH01	J201		0	A	75	C2	18	CONN. AUDIO BASIS UNITS
OUT2A-03	0	M	54	01	21		CONN. AUDIO TC VU-PANEL	J01	CLT2A-18	0	F	61	01	24	CONN. AUDIO TC VU-PANEL
	0	A	73	02	22		CONN. AUDIO BASIS UNITS	P02		0	A	75	C2	20	CONN. AUDIO BASIS UNITS
	0	V	78	04	02		TRANSF. CCNN. BCARD CUT2 CH03		OUT2A-19	0	M	62	01	21	CONN. AUDIO TC VU-PANEL
			78	06	10		CONNECTION BOARD CUT2 CH03	J201		0	A	75	C2	22	CONN. AUDIO BASIS UNITS
OUT2A-04	0	F	54	01	24		CONN. AUDIO TC VU-PANEL	J01	CLT2A-2C	0	F	62	01	24	CONN. AUDIO TC VU-PANEL
	0	A	73	02	24		CONN. AUDIO BASIS UNITS	P02		0	A	75	C2	24	CONN. AUDIO BASIS UNITS
	0	V	79	04	02		TRANSF. CCNN. BCARD CUT2 CH04		CUT2A-21	0	M	63	01	21	CONN. AUDIO TC VU-PANEL
			79	06	10		CONNECTION BOARD CUT2 CH04	J201		0	A	75	02	26	CONN. AUDIO BASIS UNITS
OUT2A-05	0	M	55	01	21		CONN. AUDIO TO VU-PANEL	J01	OUT2A-22	0	F	63	01	24	CONN. AUDIO TC VU-PANEL
	0	A	73	02	26		CONN. AUDIO BASIS UNITS	P02		0	A	75	02	28	CONN. AUDIO BASIS UNITS
	0	V	80	04	02		TRANSF. CCNN. BCARD CUT2 CH05		OUT2A-23	0	M	64	01	21	CONN. AUDIO TC VU-PANEL
			80	06	10		CONNECTION BOARD CUT2 CH05	J201		0	A	75	02	30	CONN. AUDIO BASIS UNITS
OUT2A-06	0	F	55	01	24		CONN. AUDIO TC VU-PANEL	J01							
	0	A	73	02	28		CONN. AUDIO BASIS UNITS	P02							
	0	V	81	04	02		TRANSF. CCNN. BCARD CUT2 CH06								

SIG.NAME	COLOR	TYPE	GR	EL	PT	S	DESCRIPTION OF ELEMENT	SIG.NAME	COLOR	TYPE	GR	EL	PT	S	DESCRIPTION OF ELEMENT
OUT2A-24	0	F	64	01	24		CONN. AUDIO TC VU-PANEL	OUT2B-1C	6	F	57	01	23		CCNN. AUDIO TO VU-PANEL
	0	A	75	02	32		CONN. AUDIO BASIS UNITS		6	A	74	02	21		CONN. AUDIO BASIS UNITS
OUT2B-XY			91	01	18B		SYNC. AMP. CHXY	OUT2B-11	6	M	58	01	22		CCNN. AUDIO TO VU-PANEL
									6	A	74	02	23		CONN. AUDIO BASIS UNITS
OUT2B-01	6	M	53	01	22		CONN. AUDIO TO VU-PANEL	OUT2B-12	6	F	58	01	23		CCNN. AUDIO TO VU-PANEL
	6	A	73	02	19		CONN. AUDIO BASIS UNITS		6	A	74	02	25		CONN. AUDIO BASIS UNITS
	6	V	76	04	03		TRANSF. CCNN. BCARD CUT2 CH01	OUT2B-13	6	M	59	01	22		CCNN. AUDIO TO VU-PANEL
			76	06	08		CONNECTION BOARD OUT2 CH01		6	A	74	02	27		CONN. AUDIO BASIS UNITS
			76	06	09		CONNECTION BOARD OUT2 CH01	OUT2B-14	6	F	59	01	23		CCNN. AUDIO TO VU-PANEL
OUT2B-02	6	F	53	01	23		CONN. AUDIO TO VU-PANEL		6	A	74	02	29		CONN. AUDIO BASIS UNITS
	6	A	73	02	21		CONN. AUDIO BASIS UNITS	OUT2B-15	6	M	60	01	22		CCNN. AUDIO TO VU-PANEL
	6	V	77	04	03		TRANSF. CCNN. BCARD CUT2 CH02		6	A	74	02	31		CONN. AUDIO BASIS UNITS
			77	06	08		CONNECTION BOARD OUT2 CH02	OUT2B-16	6	F	60	01	23		CCNN. AUDIO TO VU-PANEL
			77	06	09		CONNECTION BOARD OUT2 CH02		6	A	74	02	33		CONN. AUDIO BASIS UNITS
OUT2B-03	6	M	54	01	22		CONN. AUDIO TO VU-PANEL	OUT2B-17	6	M	61	01	22		CCNN. AUDIO TO VU-PANEL
	6	A	73	02	23		CONN. AUDIO BASIS UNITS		6	A	75	02	19		CONN. AUDIO BASIS UNITS
	6	V	78	04	03		TRANSF. CCNN. BCARD CUT2 CH03	OUT2B-18	6	F	61	01	23		CCNN. AUDIO TO VU-PANEL
			78	06	08		CONNECTION BOARD OUT2 CH03		6	A	75	02	21		CONN. AUDIO BASIS UNITS
			78	06	09		CONNECTION BOARD OUT2 CH03	OUT2B-19	6	M	62	01	22		CCNN. AUDIO TO VU-PANEL
OUT2B-04	6	F	54	01	23		CONN. AUDIO TO VU-PANEL		6	A	75	02	23		CONN. AUDIO BASIS UNITS
	6	A	73	02	25		CONN. AUDIO BASIS UNITS	OUT2B-20	6	F	62	01	23		CCNN. AUDIO TO VU-PANEL
	6	V	79	04	03		TRANSF. CCNN. BCARD CUT2 CH04		6	A	75	02	25		CONN. AUDIO BASIS UNITS
			79	06	08		CONNECTION BOARD OUT2 CH04	OUT2B-21	6	M	63	01	22		CCNN. AUDIO TO VU-PANEL
			79	06	09		CONNECTION BOARD OUT2 CH04		6	A	75	02	27		CONN. AUDIO BASIS UNITS
OUT2B-05	6	M	55	01	22		CONN. AUDIO TO VU-PANEL	OUT2B-22	6	F	63	01	23		CCNN. AUDIO TO VU-PANEL
	6	A	73	02	27		CONN. AUDIO BASIS UNITS		6	A	75	02	29		CONN. AUDIO BASIS UNITS
	6	V	80	04	03		TRANSF. CCNN. BCARD CUT2 CH05	OUT2B-23	6	M	64	01	22		CCNN. AUDIO TO VU-PANEL
			80	06	08		CONNECTION BOARD OUT2 CH05		6	A	75	02	31		CONN. AUDIO BASIS UNITS
			80	06	09		CONNECTION BOARD OUT2 CH05	OUT2B-24	6	F	64	01	23		CCNN. AUDIO TO VU-PANEL
OUT2B-06	6	F	55	01	23		CONN. AUDIO TO VU-PANEL		6	A	75	02	33		CONN. AUDIO BASIS UNITS
	6	A	73	02	29		CONN. AUDIO BASIS UNITS	S-CALIB	5	F	53	04	08		CCNN. CH. FEED
	6	V	81	04	03		TRANSF. CCNN. BCARD CUT2 CH06		5	F	54	04	08		CCNN. CH. FEED
			81	06	08		CONNECTION BOARD OUT2 CH06		5	F	55	04	08		CCNN. CH. FEED
			81	06	09		CONNECTION BOARD OUT2 CH06		5	F	56	04	08		CCNN. CH. FEED
OUT2B-07	6	M	56	01	22		CONN. AUDIO TO VU-PANEL		5	F	57	04	08		CCNN. CH. FEED
	6	A	73	02	31		CONN. AUDIO BASIS UNITS		5	F	58	04	08		CCNN. CH. FEED
	6	V	82	04	03		TRANSF. CCNN. BCARD CUT2 CH07		5	F	59	04	08		CCNN. CH. FEED
			82	06	08		CONNECTION BOARD OUT2 CH07		5	F	60	04	08		CCNN. CH. FEED
			82	06	09		CONNECTION BOARD OUT2 CH07		5	F	61	04	08		CCNN. CH. FEED
OUT2B-08	6	F	56	01	23		CONN. AUDIO TO VU-PANEL		5	F	62	04	08		CCNN. CH. FEED
	6	A	73	02	33		CONN. AUDIO BASIS UNITS		5	F	63	04	08		CCNN. CH. FEED
	6	V	83	04	03		TRANSF. CCNN. BCARD CUT2 CH08		5	F	64	04	08		CCNN. CH. FEED
			83	06	08		CONNECTION BOARD OUT2 CH08		5	F	65	04	08		CCNN. CH. FEED
			83	06	09		CONNECTION BOARD OUT2 CH08		5	F	66	04	08		CCNN. CH. FEED
OUT2B-09	6	M	57	01	22		CONN. AUDIO TO VU-PANEL		5	F	67	04	08		CCNN. CH. FEED
	6	A	74	02	19		CONN. AUDIO BASIS UNITS		5	F	68	04	08		CCNN. CH. FEED

SIG.NAME	COLOR	TYPE	GR	EL	PT	S	DESCRIPTION OF ELEMENT	SIG.NAME	COLOR	TYPE	GR	EL	PT	S	DESCRIPTION OF ELEMENT
(CONT.)	5	F	64	04	08		CONN. CH. FEED	(CONT.)	4	F	58	04	09		CONN. CH. FEED
	5	F	69	01	08		CONN. MASTER- VU-PANEL		4	F	59	04	09		CONN. CH. FEED
	5	F	69	03	08		CONN. CH. FEED		4	F	60	04	09		CONN. CH. FEED
	5	F	69	04	08		CONN. LOWER CH. LEVEL		4	F	61	04	09		CONN. CH. FEED
	5	F	70	01	08		CONN. VU-PANEL		4	F	62	04	09		CONN. CH. FEED
	5	F	70	03	08		CONN. CH. FEED		4	F	63	04	09		CONN. CH. FEED
	5	F	70	04	08		CONN. LOWER CH. LEVEL		4	F	64	04	09		CONN. CH. FEED
	5	F	71	01	08		CONN. VU-PANEL		2	F	69	01	09		CONN. MASTER- VU-PANEL
	5	F	71	03	08		CONN. CH. FEED		2	F	69	03	09		CONN. CH. FEED
	5	F	71	04	08		CONN. LOWER CH. LEVEL		2	F	69	04	09		CONN. LOWER CH. LEVEL
	5	B	72	01	45		CONN. JUNCTION BOX		2	F	70	01	09		CONN. VU-PANEL
	5	V	72	04	02		MASTER BOARD 3		2	F	70	03	09		CONN. CH. FEED
			90	01	12B		REPRODUCE AMP. CH XY		2	F	70	04	09		CONN. LOWER CH. LEVEL
			91	01	12B		SYNC. AMP. CHXY		2	F	71	01	09		CONN. VU-PANEL
S-CCIR	1	F	53	04	11		CONN. CH. FEED		2	F	71	03	09		CONN. CH. FEED
	1	F	54	04	11		CONN. CH. FEED		2	F	71	04	09		CONN. LOWER CH. LEVEL
	1	F	55	04	11		CONN. CH. FEED		2	B	72	01	47		CONN. JUNCTION BOX
	1	F	56	04	11		CONN. CH. FEED		2	V	72	04	01		MASTER BOARD 3
	1	F	57	04	11		CONN. CH. FEED				90	01	13A		REPRODUCE AMP. CH XY
	1	F	58	04	11		CONN. CH. FEED				91	01	13A		SYNC. AMP. CHXY
	1	F	59	04	11		CONN. CH. FEED	S-HEAD	6	R	52	05	29		CONN. ERASE HEAD CH01-16
	1	F	60	04	11		CONN. CH. FEED		6	M	56	03	18		CONN. HEAD SIGNALS
	1	F	61	04	11		CONN. CH. FEED		6	M	60	03	18		CONN. HEAD SIGNALS
	1	F	62	04	11		CONN. CH. FEED		6	M	64	03	18		CONN. HEAD SIGNALS
	1	F	63	04	11		CONN. CH. FEED		4	F	69	03	17		CONN. CH. FEED
	1	F	64	04	11		CONN. CH. FEED		4	F	69	04	01		CONN. LOWER CH. LEVEL
	1	F	69	01	11		CONN. MASTER- VU-PANEL		4	F	70	04	01		CONN. LOWER CH. LEVEL
	1	F	69	03	11		CONN. CH. FEED		4	M	71	02	04		CONN. POWER SUPPLY
	1	F	69	04	11		CONN. LOWER CH. LEVEL				94	01	25A		MASTER OSCILLATOR
	1	F	70	01	11		CONN. VU-PANEL	S-IN -XY			90	01	26B		REPRODUCE AMP. CH XY
	1	F	70	03	11		CONN. CH. FEED								
	1	F	70	04	11		CONN. LOWER CH. LEVEL	S-IN -01	1	F	53	02	02		CONN. CONTROL TO VU-PANEL
	1	F	71	01	11		CONN. VU-PANEL		1	R	73	01	19		CONN. CONTROL BASIS UNITS
	1	F	71	03	11		CONN. CH. FEED		1	R	73	04	17		CONN. REMOTE CONTRL
	1	F	71	04	11		CONN. LOWER CH. LEVEL		1	F	76	01	09		CONN. CONTROL CH01
	1	B	72	01	40		CONN. JUNCTION BOX		1	F	76	01	10		CONN. CONTROL CH01
	1	V	72	04	03		MASTER BOARD 3	S-IN -02	9	M	53	02	14		CONN. CONTROL TO VU-PANEL
			90	01	30B		REPRODUCE AMP. CH XY		9	R	73	01	20		CONN. CONTROL BASIS UNITS
			91	01	30B		SYNC. AMP. CHXY		9	R	73	04	18		CONN. REMOTE CONTRL
			92	01	30B		RECORD AMP. CH XY		9	F	77	01	09		CONN. CONTROL CH02
			93	01	30B		HF DRIVER CH. XY		9	F	77	01	10		CONN. CONTROL CH02
S-CCDE	0	R	52	03	14		CONN. REC. HEAD CH01-16	S-IN -03	3	F	54	02	02		CONN. CONTROL TO VU-PANEL
	0	F	52	11	11		CONN. CODE CHANNEL		3	R	73	01	21		CONN. CONTROL BASIS UNITS
	0	F	52	12	02		CONN. TAPE DECK		3	R	73	04	19		CONN. REMOTE CONTRL
	3	B	72	02	21		CONN. TAPE DECK		3	F	78	01	09		CONN. CONTROL CH03
	3	V	72	03	06		MASTER BOARD 2		3	F	78	01	10		CONN. CONTROL CH03
	0	V	72	03	07		MASTER BOARD 2		3	F	78	01	10		CONN. CONTROL CH03
	0	V	72	07	26		TLS SWITCH BOARD	S-IN -04	9	M	54	02	14		CONN. CONTROL TO VU-PANEL
S-GAIN	4	F	53	04	09		CONN. CH. FEED		9	R	73	01	22		CONN. CONTROL BASIS UNITS
	4	F	54	04	09		CONN. CH. FEED		9	R	73	04	20		CONN. REMOTE CONTRL
	4	F	55	04	09		CONN. CH. FEED		9	F	79	01	09		CONN. CONTROL CH04
	4	F	56	04	09		CONN. CH. FEED		9	F	79	01	10		CONN. CONTROL CH04
	4	F	57	04	09		CONN. CH. FEED		9	F	79	01	10		CONN. CONTROL CH04

SIG.NAME	COLOR	TYPE	GR	EL	PT	S	DESCRIPTION OF ELEMENT	SIG.NAME	COLOR	TYPE	GR	EL	PT	S	DESCRIPTION OF ELEMENT	
S-IN -05	5	F	55	02	02		CONN. CONTROL TO VU-PANEL	J02	S-IA -17	1	F	61	02	02	CCNN. CONTROL TC VU-PANEL	JC2
	5	R	73	01	23		CONN. CONTROL BASIS UNITS	J01		1	R	75	01	19	CCNA. CCNTROL BASIS UNITS	JC1
	5	R	73	04	21		CONN. REMCTE CCTRL	J04		1	R	75	04	17	CONN. REMOTE CCTRL	JC4
	5	F	80	01	09		CONN. CONTROL CH05	J01	S-IA -18	9	M	61	02	14	CCNA. CCNTROL TC VU-PANEL	J02
	5	F	80	01	10		CONN. CONTROL CH05	J01		9	R	75	01	20	CONN. CONTROL BASIS UNITS	J01
S-IN -06	9	M	55	02	14		CONN. CONTROL TO VU-PANEL	J02		9	R	75	04	18	CONN. REMOTE CCTRL	J04
	9	R	73	01	24		CONN. CONTROL BASIS UNITS	J01	S-IN -19	3	F	62	02	02	CCNN. CCNTROL TC VU-PANEL	JC2
	9	R	73	04	22		CONN. REMCTE CCTRL	J04		3	R	75	01	21	CCNA. CCNTROL BASIS UNITS	JC1
	9	F	81	01	09		CONN. CONTROL CH06	J01		3	R	75	04	19	CCNA. REMCTE CCTRL	J04
	9	F	81	01	10		CONN. CONTROL CH06	J01	S-IA -20	9	M	62	02	14	CCNN. CONTROL TO VU-PANEL	JC2
S-IN -07	6	F	56	02	02		CONN. CONTROL TO VU-PANEL	J02		9	R	75	01	22	CCNA. CCNTROL BASIS UNITS	J01
	6	R	73	01	25		CONN. CONTROL BASIS UNITS	J01		9	R	75	04	20	CONN. REMOTE CCTRL	JC4
	6	R	73	04	23		CONN. REMCTE CCTRL	J04	S-IA -21	5	F	63	02	02	CCNA. CCNTROL TC VU-PANEL	J02
	6	F	82	01	09		CONN. CONTROL CHC7	J01		5	R	75	01	23	CONN. CONTROL BASIS UNITS	JC1
	6	F	82	01	10		CONN. CONTROL CH07	J01		5	R	75	04	21	CONN. REMOTE CCTRL	JC4
S-IN -08	9	M	56	02	14		CONN. CONTROL TO VU-PANEL	J02	S-IA -22	9	M	63	02	14	CCNN. CCNTROL TC VU-PANEL	JC2
	9	R	73	01	26		CONN. CONTROL BASIS UNITS	J01		9	R	75	01	24	CCNN. CONTROL BASIS UNITS	J01
	9	R	73	04	24		CONN. REMCTE CCTRL	J04		9	R	75	04	22	CCNA. REMCTE CCTRL	J04
	9	F	83	01	09		CONN. CONTROL CH08	J01	S-IA -23	6	F	64	02	02	CCNN. CONTROL TO VU-PANEL	JC2
	9	F	83	01	10		CONN. CONTROL CH08	J01		6	R	75	01	25	CCNA. CCNTROL BASIS UNITS	JC1
S-IN -09	1	F	57	02	02		CONN. CONTROL TC VU-PANEL	J02		6	R	75	04	23	CONN. REMOTE CCTRL	J04
	1	R	74	01	19		CONN. CONTROL BASIS UNITS	J01	S-IA -24	9	M	64	02	14	CCNA. CONTROL TC VU-PANEL	JC2
	1	R	74	04	17		CONN. REMCTE CCTRL	J04		9	R	75	01	26	CCNA. CCNTROL BASIS UNITS	J01
S-IN -10	9	M	57	02	14		CONN. CONTROL TC VU-PANEL	J02		9	R	75	04	24	CONN. REMOTE CCTRL	J04
	9	R	74	01	20		CONN. CONTROL BASIS UNITS	J01	S-INDCTL	5	F	69	01	24	CCNA. MASTER- VU-PANEL	J01
	9	R	74	04	18		CONN. REMCTE CCTRL	J04		5	F	69	04	02	CONN. LOWER CH. LEVEL	J04
S-IN -11	3	F	58	02	02		CONN. CONTROL TO VU-PANEL	J02		5	F	70	01	24	CCNN. VU-PANEL	JC1
	3	R	74	01	21		CONN. CONTROL BASIS UNITS	J01		5	F	70	04	02	CCNA. JCWER CH. LEVEL	J04
	3	R	74	04	19		CONN. REMOTE CCTRL	J04		5	F	71	01	24	CCNN. VU-PANEL	JC1
S-IN -12	9	M	58	02	14		CONN. CONTROL TC VU-PANEL	J02		5	F	71	04	02	CONN. LOWER CH. LEVEL	J04
	9	R	74	01	22		CONN. CONTROL BASIS UNITS	J01		5	E	72	01	16	CCNA. JUNCTION ECX	J01
	9	R	74	04	20		CONN. REMCTE CCTRL	J04		5	E	72	01	17	CCNN. JUNCTION BCX	J01
S-IN -13	5	F	59	02	02		CONN. CONTROL TO VU-PANEL	J02		5	V	72	05	04	MASTER BOARD, CUPUT 1	
	5	R	74	01	23		CONN. CONTROL BASIS UNITS	J01		5	V	72	05	05	MASTER BOARD, CUPUT 1	
	5	R	74	04	21		CONN. REMOTE CCTRL	J04		5	R	73	01	55	CCNA. CONTROL BASIS UNITS	JC1
S-IN -14	9	M	59	02	14		CONN. CONTROL TO VU-PANEL	J02		5	R	74	01	55	CONN. CONTROL BASIS UNITS	J01
	9	R	74	01	24		CCNN. CCNTROL BASIS UNITS	J01		5	R	75	01	55	CCNA. CCNTROL BASIS UNITS	J01
	9	R	74	04	22		CONN. REMOTE CCTRL	J04		5	F	76	01	11	CCNN. CONTROL CHC1	J01
S-IN -15	6	F	60	02	02		CONN. CONTROL TC VU-PANEL	J02		5	F	76	01	12	CCNN. CONTROL CHC1	J01
	6	R	74	01	25		CONN. CONTROL BASIS UNITS	J01		5	F	77	01	11	CCNA. CCNTROL CH02	J01
	6	R	74	04	23		CONN. REMCTE CCTRL	J04		5	F	77	01	12	CCNN. CCNTROL CH02	J01
S-IN -16	9	M	60	02	14		CONN. CONTROL TO VU-PANEL	JC2		5	F	78	01	11	CCNA. CONTROL CH03	J01
	9	R	74	01	26		CONN. CONTROL BASIS UNITS	J01		5	F	78	01	12	CCNN. CCNTROL CH03	J01
	9	R	74	04	24		CONN. REMCTE CCTRL	J04		5	F	79	01	11	CCNA. CCNTROL CH04	J01
										5	F	79	01	12	CCNA. CCNTROL CH04	J01
										5	F	80	01	11	CCNA. CCNTROL CH05	J01
										5	F	80	01	12	CCNN. CONTROL CH05	J01
										5	F	81	01	11	CCNA. CONTROL CH06	J01

SIG.NAME	COLOR	TYPE	GR	EL	PT	S	DESCRIPTION OF ELEMENT	SIG.NAME	COLOR	TYPE	GR	EL	PT	S	DESCRIPTION OF ELEMENT	
(CCNT.)	5	F	81	01	12		CONN. CONTROL CHC6	J01	(CCNT.)	6	F	70	03	18	CCNN. CH. FEED	JC3
	5	F	82	01	11		CONN. CONTROL CH07	J01		6	M	70	04	18	CCNN. LOWER CH. LEVEL	J04
	5	F	82	01	12		CONN. CONTROL CH07	J01		6	F	71	01	18	CCNN. VU-PANEL	J01
	5	F	83	01	11		CONN. CONTROL CH08	J01		6	F	71	03	18	CCNN. CH. FEED	JC3
	5	F	83	01	12		CONN. CONTROL CH08	J01		6	M	71	04	18	CCNN. LOWER CH. LEVEL	J04
S-INM1	1	F	53	04	05		CONN. CH. FEED	J04		6	E	72	01	49	CONN. JUNCTION BCX	JC1
	1	F	54	04	05		CONN. CH. FEED	J04		6	V	72	06	01	MASTER BOARD, OUTPUT 2	
	1	F	55	04	05		CONN. CH. FEED	J04				91	01	22B	SYNC. AMP. CHXY	P01
	1	F	56	04	05		CONN. CH. FEED	J04	S-INM2R	6	E	72	01	50	CCNN. JUNCTION BCX	JC1
	1	F	57	04	05		CONN. CH. FEED	J04		6	V	72	06	09	MASTER BOARD, OUTPUT 2	
	1	F	58	04	05		CONN. CH. FEED	J04		6	R	73	01	73	CONN. CONTROL BASIS UNITS	JC1
	1	F	59	04	05		CONN. CH. FEED	J04		6	R	73	04	74	CONN. REMOTE CONTROL	J04
	1	F	60	04	05		CONN. CH. FEED	J04		6	R	74	04	74	CONN. REMOTE CONTROL	J04
	1	F	61	04	05		CONN. CH. FEED	J04		6	R	75	04	74	CONN. REMOTE CONTROL	J04
	1	F	62	04	05		CONN. CH. FEED	J04								
	1	F	63	04	05		CONN. CH. FEED	J04	S-LCCIN	0	F	69	01	17	CCNA. MASTER- VU-PANEL	J01
	1	F	64	04	05		CONN. CH. FEED	J04		0	M	69	04	20	CCNN. LOWER CH. LEVEL	J04
	1	F	69	01	05		CONN. MASTER- VU-PANEL	J01		0	F	70	01	17	CCNA. VU-PANEL	JC1
	1	F	69	03	05		CONN. CH. FEED	J03		0	M	70	04	20	CCNA. LOWER CH. LEVEL	J04
	1	F	69	04	05		CONN. LOWER CH. LEVEL	J04		0	F	71	01	17	CCNN. VU-PANEL	JC1
	1		69	06	14		CONN. TAPE DECK	J06		0	M	71	04	20	CCNA. LOWER CH. LEVEL	J04
	1	F	70	01	05		CONN. VU-PANEL	J01		0	B	72	01	10	CCNN. JUNCTION BCX	J01
	1	F	70	03	05		CONN. CH. FEED	J03		0	E	72	01	11	CCNN. JUNCTION BCX	JC1
	1	F	70	04	05		CONN. LOWER CH. LEVEL	J04		0	V	72	03	08	MASTER BOARD 2	
	1	F	71	01	05		CONN. VU-PANEL	J01		0	V	72	05	12	MASTER BOARD, OUTPUT 1	
	1	F	71	03	05		CONN. CH. FEED	J03		0	V	72	05	13	MASTER BOARD, OUTPUT 1	
	1	F	71	04	05		CONN. LOWER CH. LEVEL	J04		0	V	72	05	14	MASTER BOARD, OUTPUT 1	
	1	B	72	01	24		CONN. JUNCTION BOX	J01		0	V	72	06	12	MASTER BOARD, OUTPUT 2	
	1	V	72	05	01		MASTER BOARD, OUTPUT 1			0	V	72	06	13	MASTER BOARD, OUTPUT 2	
			90	01	22B		REPRODUCE AMP. CH XY	P01		0	R	73	01	51	CCNA. CONTROL BASIS UNITS	JC1
S-INM1R	1	B	72	01	25		CONN. JUNCTION BCX	J01		0	R	74	01	51	CCNA. CONTROL BASIS UNITS	J01
	1	V	72	05	09		MASTER BOARD, OUTPUT 1			0	R	75	01	51	CCNN. CONTROL BASIS UNITS	J01
	1	R	73	01	72		CONN. CONTROL BASIS UNITS	J01		0	F	76	01	13	CCNA. CONTROL CH01	J01
	1	R	73	04	73		CONN. REMOTE CONTROL	J04		0	F	76	01	14	CCNA. CONTROL CH01	J01
	1	R	74	04	73		CONN. REMOTE CONTROL	J04		0	F	77	01	13	CCNA. CONTROL CH02	J01
	1	R	75	04	73		CONN. REMOTE CONTROL	J04		0	F	77	01	14	CCNA. CONTROL CH02	J01
S-INM2	9	F	53	04	18		CONN. CH. FEED	J04		0	F	78	01	13	CCNA. CONTROL CH03	J01
	9	F	54	04	18		CONN. CH. FEED	J04		0	F	78	01	14	CONN. CONTROL CH03	JC1
	9	F	55	04	18		CONN. CH. FEED	J04		0	F	79	01	13	CONN. CONTROL CH04	J01
	9	F	56	04	18		CONN. CH. FEED	J04		0	F	79	01	14	CCNA. CONTROL CH04	J01
	9	F	57	04	18		CONN. CH. FEED	J04		0	F	80	01	13	CCNN. CONTROL CH05	J01
	9	F	58	04	18		CONN. CH. FEED	J04		0	F	80	01	14	CCNA. CONTROL CH05	J01
	9	F	59	04	18		CONN. CH. FEED	J04		0	F	81	01	13	CCNA. CONTROL CH06	J01
	9	F	60	04	18		CONN. CH. FEED	J04		0	F	81	01	14	CONN. CONTROL CH06	JC1
	9	F	61	04	18		CONN. CH. FEED	J04		0	F	82	01	13	CCNA. CONTROL CH07	J01
	9	F	62	04	18		CONN. CH. FEED	J04		0	F	82	01	14	CCNA. CONTROL CH07	J01
	9	F	63	04	18		CONN. CH. FEED	J04		0	F	83	01	13	CONN. CONTROL CH08	J01
	9	F	64	04	18		CONN. CH. FEED	J04		0	F	83	01	14	CCNA. CONTROL CH08	JC1
	6	F	69	01	18		CONN. MASTER- VU-PANEL	J01	S-MUTE	3	B	72	02	11	CONN. TAPE DECK	JC2
	6	F	69	03	18		CONN. CH. FEED	J03		3	V	72	03	14A	MASTER BOARD 2	
	6	M	69	04	18		CONN. LOWER CH. LEVEL	J04	S-NAB	7	F	53	04	10	CONN. CH. FEED	J04
	6		69	06	15		CONN. TAPE DECK	J06		7	F	54	04	10	CCNA. CH. FEED	J04
	6	F	70	01	18		CONN. VU-PANEL	J01		7	F	55	04	10	CCNA. CH. FEED	J04

SIG.NAME	COLOR	TYPE	GR	EL	PT	S	DESCRIPTION OF ELEMENT	SIG.NAME	COLOR	TYPE	GR	EL	PT	S	DESCRIPTION OF ELEMENT
(CONT.)															
7	F		56	04	10		CONN. CH. FEED	J04	S-REA-C6	2	M	55	02	13	CCNA. CONTROL TC VU-PANEL
7	F		57	04	10		CONN. CH. FEED	J04		2	R	73	01	08	CCNA. CONTROL BASIS UNITS
7	F		58	04	10		CONN. CH. FEED	J04		2	R	73	04	06	CCNA. REMOTE CONTROL
7	F		59	04	10		CONN. CH. FEED	J04		2	F	81	01	15	CCNA. CONTROL CH06
7	F		60	04	10		CONN. CH. FEED	J04		2	F	81	01	16	CCNA. CONTROL CH06
7	F		61	04	10		CONN. CH. FEED	J04							
7	F		62	04	10		CONN. CH. FEED	J04	S-REA-C7	6	F	56	02	01	CCNA. CONTROL TC VU-PANEL
7	F		63	04	10		CONN. CH. FEED	J04		6	R	73	01	09	CCNA. CONTROL BASIS UNITS
7	F		64	04	10		CONN. CH. FEED	J04		6	R	73	04	07	CCNA. REMOTE CONTROL
8	F		69	01	10		CONN. MASTER- VU-PANEL	J01		6	F	82	01	15	CCNA. CONTROL CH07
8	F		69	03	10		CONN. CH. FEED	J03		6	F	82	01	16	CCNA. CONTROL CH07
8	F		69	04	10		CONN. LOWER CH. LEVEL	J04							
8	F		70	01	10		CONN. VU-PANEL	J01	S-REA-C8	2	M	56	02	13	CCNA. CONTROL TC VU-PANEL
8	F		70	03	10		CONN. CH. FEED	J03		2	R	73	01	10	CCNA. CONTROL BASIS UNITS
8	F		70	04	10		CONN. LOWER CH. LEVEL	J04		2	R	73	04	08	CCNA. REMOTE CONTROL
8	F		71	01	10		CONN. VU-PANEL	J01		2	F	83	01	15	CCNA. CONTROL CH08
8	F		71	03	10		CONN. CH. FEED	J03		2	F	83	01	16	CCNA. CONTROL CH08
8	F		71	04	10		CONN. LOWER CH. LEVEL	J04							
8	B		72	01	41		CONN. JUNCTION BOX	J01	S-REA-C9	1	F	57	02	01	CCNA. CONTROL TC VU-PANEL
8	V		72	04	04		MASTER BOARD 3			1	R	74	01	03	CCNA. CONTROL BASIS UNITS
			90	01	31A		REPRODUCE AMP. CH XY	P01		1	R	74	04	01	CCNA. REMOTE CONTROL
			91	01	31A		SYNC. AMP. CHXY	P01							
			92	01	31A		RECORD AMP. CH XY	P01	S-REA-10	2	M	57	02	13	CCNA. CONTROL TC VU-PANEL
			93	01	31A		HF DRIVER CH. XY	P01		2	R	74	01	04	CCNA. CONTROL BASIS UNITS
										2	R	74	04	02	CCNA. REMOTE CONTROL
S-REA-XY			93	01	26B		HF DRIVER CH. XY	P01							
S-REA-01	1	F	53	02	01		CONN. CONTROL TC VU-PANEL	J02	S-REA-11	3	F	58	02	01	CCNA. CONTROL TC VU-PANEL
	1	R	73	01	03		CONN. CONTROL BASIS UNITS	J01		3	R	74	01	05	CCNA. CONTROL BASIS UNITS
	1	R	73	04	01		CONN. REMOTE CONTROL	J04		3	R	74	04	03	CCNA. REMOTE CONTROL
	1	F	76	01	15		CONN. CONTROL CH01	J01	S-REA-12	2	M	58	02	13	CCNA. CONTROL TC VU-PANEL
	1	F	76	01	16		CONN. CONTROL CH01	J01		2	R	74	01	06	CCNA. CONTROL BASIS UNITS
										2	R	74	04	04	CCNA. REMOTE CONTROL
S-REA-02	2	M	53	02	13		CONN. CONTROL TC VU-PANEL	J02	S-REA-13	5	F	59	02	01	CCNA. CONTROL TC VU-PANEL
	2	R	73	01	04		CONN. CONTROL BASIS UNITS	J01		5	R	74	01	07	CCNA. CONTROL BASIS UNITS
	2	R	73	04	02		CONN. REMOTE CONTROL	J04		5	R	74	04	05	CCNA. REMOTE CONTROL
	0	F	77	01	15		CONN. CONTROL CH02	J01	S-REA-14	2	M	59	02	13	CCNA. CONTROL TC VU-PANEL
	0	F	77	01	16		CONN. CONTROL CH02	J01		2	R	74	01	08	CCNA. CONTROL BASIS UNITS
										2	R	74	04	06	CCNA. REMOTE CONTROL
S-REA-03	3	F	54	02	01		CONN. CONTROL TC VU-PANEL	J02	S-REA-15	6	F	60	02	01	CCNA. CONTROL TC VU-PANEL
	3	R	73	01	05		CONN. CONTROL BASIS UNITS	J01		6	R	74	01	09	CCNA. CONTROL BASIS UNITS
	3	R	73	04	03		CONN. REMOTE CONTROL	J04		6	R	74	04	07	CCNA. REMOTE CONTROL
	3	F	78	01	15		CONN. CONTROL CH03	J01							
	3	F	78	01	16		CONN. CONTROL CH03	J01							
S-REA-04	2	M	54	02	13		CONN. CONTROL TC VU-PANEL	J02	S-REA-16	2	M	60	02	13	CONN. CONTROL TC VU-PANEL
	2	R	73	01	06		CONN. CONTROL BASIS UNITS	J01		2	R	74	01	10	CONN. CONTROL BASIS UNITS
	2	R	73	04	04		CONN. REMOTE CONTROL	J04		2	R	74	04	08	CCNA. REMOTE CONTROL
	2	F	79	01	15		CONN. CONTROL CH04	J01							
	2	F	79	01	16		CONN. CONTROL CH04	J01	S-REA-17	1	F	61	02	01	CCNA. CONTROL TC VU-PANEL
										1	R	75	01	03	CCNA. CONTROL BASIS UNITS
S-REA-05	5	F	55	02	01		CONN. CONTROL TC VU-PANEL	J02		1	R	75	04	01	CCNA. REMOTE CONTROL
	5	R	73	01	07		CONN. CONTROL BASIS UNITS	J01	S-REA-18	2	M	61	02	13	CCNA. CONTROL TC VU-PANEL
	5	R	73	04	05		CONN. REMOTE CONTROL	J04		2	R	75	01	04	CCNA. CONTROL BASIS UNITS
	5	F	80	01	15		CONN. CONTROL CH05	J01							
	5	F	80	01	16		CONN. CONTROL CH05	J01							

SIG.NAME	COLOR	TYPE	GR	EL	PT	S	DESCRIPTION OF ELEMENT	SIG.NAME	COLOR	TYPE	GR	EL	PT	S	DESCRIPTION OF ELEMENT
(CONT.)															
3	R		75	04	02		CONN. REMOTE CONTROL	J04	(CONT.)	4	R	73	04	10	CONN. REMOTE CONTROL
S-REA-19	3	F	62	02	01		CONN. CONTROL TC VU-PANEL	J02		4	F	77	01	01	CCNA. CONTROL CH02
	3	R	75	01	05		CONN. CONTROL BASIS UNITS	J01		4	F	77	01	02	CCNA. CONTROL CH02
	3	R	75	04	03		CONN. REMOTE CONTROL	J04	S-REP-C3	3	F	54	02	03	CCNA. CONTROL TC VU-PANEL
S-REA-20	2	M	62	02	13		CONN. CONTROL TC VU-PANEL	J02		3	R	73	01	13	CCNA. CONTROL BASIS UNITS
	2	R	75	01	06		CONN. CONTROL BASIS UNITS	J01		3	R	73	04	11	CONN. REMOTE CONTROL
	2	R	75	04	04		CONN. REMOTE CONTROL	J04		3	F	78	01	01	CCNA. CONTROL CH03
										3	F	78	01	02	CCNA. CONTROL CH03
S-REA-21	5	F	63	02	01		CONN. CONTROL TC VU-PANEL	J02	S-REP-04	4	M	54	02	15	CCNA. CONTROL TC VU-PANEL
	5	R	75	01	07		CONN. CONTROL BASIS UNITS	J01		4	R	73	01	14	CCNA. CONTROL BASIS UNITS
	5	R	75	04	05		CONN. REMOTE CONTROL	J04		4	R	73	04	12	CONN. REMOTE CONTROL
										4	F	79	01	01	CCNA. CONTROL CH04
S-REA-22	2	M	63	02	13		CONN. CONTROL TC VU-PANEL	J02		4	F	79	01	02	CCNA. CONTROL CH04
	2	R	75	01	08		CONN. CONTROL BASIS UNITS	J01	S-REP-05	5	F	55	02	03	CONN. CONTROL TC VU-PANEL
	2	R	75	04	06		CONN. REMOTE CONTROL	J04		5	R	73	01	15	CCNA. CONTROL BASIS UNITS
										5	R	73	04	13	CONN. REMOTE CONTROL
S-REA-23	6	F	64	02	01		CONN. CONTROL TC VU-PANEL	J02		5	F	80	01	01	CCNA. CONTROL CH05
	6	R	75	01	09		CONN. CONTROL BASIS UNITS	J01		5	F	80	01	02	CCNA. CONTROL CH05
	6	R	75	04	07		CONN. REMOTE CONTROL	J04							
S-REA-24	2	M	64	02	13		CONN. CONTROL TC VU-PANEL	J02	S-REP-06	4	M	55	02	15	CONN. CONTROL TC VU-PANEL
	2	R	75	01	10		CONN. CONTROL BASIS UNITS	J01		4	R	73	01	16	CCNA. CONTROL BASIS UNITS
	2	R	75	04	08		CONN. REMOTE CONTROL	J04		4	R	73	04	14	CONN. REMOTE CONTROL
										4	F	81	01	01	CCNA. CONTROL CH06
S-RECOFF	9	B	72	02	01		CONN. TAPE DECK	J02		4	F	81	01	02	CCNA. CONTROL CH06
	9	V	72	04	07		MASTER BOARD 3		S-REP-07	6	F	56	02	03	CONN. CONTROL TC VU-PANEL
S-REM-TD	8	B	72	02	23		CONN. TAPE DECK	J02		6	R	73	01	17	CCNA. CONTROL BASIS UNITS
	8	V	72	03	03		MASTER BOARD 2			6	R	73	04	15	CONN. REMOTE CONTROL
										6	F	82	01	01	CCNA. CONTROL CH07
S-REMIN	0	F	69	01	21		CONN. MASTER- VU-PANEL	J01		6	F	82	01	02	CCNA. CONTROL CH07
	0	M	69	04	19		CONN. LOWER CH. LEVEL	J04	S-REP-08	4	M	56	02	15	CONN. CONTROL TC VU-PANEL
	0	F	70	01	21		CONN. VU-PANEL	J01		4	R	73	01	18	CONN. CONTROL BASIS UNITS
	0	M	70	04	19		CONN. LOWER CH. LEVEL	J04		4	R	73	04	16	CONN. REMOTE CONTROL
	0	F	71	01	21		CONN. VU-PANEL	J01		4	F	83	01	01	CCNA. CONTROL CH08
	0	M	71	04	19		CONN. LOWER CH. LEVEL	J04		4	F	83	01	02	CCNA. CONTROL CH08
	0	B	72	01	06		CONN. JUNCTION BOX	J01							
	0	B	72	01	07		CONN. JUNCTION BOX	J01	S-REP-09	1	F	57	02	03	CONN. CONTROL TC VU-PANEL
	0	V	72	03	09		MASTER BOARD 2			1	R	74	01	11	CCNA. CONTROL BASIS UNITS
	0	R	73	01	56		CONN. CONTROL BASIS UNITS	J01		1	R	74	04	09	CONN. REMOTE CONTROL
	0	R	73	04	56		CONN. REMOTE CONTROL	J04	S-REP-10	4	M	57	02	15	CCNA. CONTROL TC VU-PANEL
										4	R	74	01	12	CCNA. CONTROL BASIS UNITS
S-REP-XY			90	01	21A		REPRODUCE AMP. CH XY	P01		4	R	74	04	10	CCNA. REMOTE CONTROL
			91	01	21A		SYNC. AMP. CHXY	P01							
S-REP-01	1	F	53	02	03		CONN. CONTROL TC VU-PANEL	J02	S-REP-11	3	F	58	02	03	CONN. CONTROL TC VU-PANEL
	1	R	73	01	11		CONN. CONTROL BASIS UNITS	J01		3	R	74	01	13	CONN. CONTROL BASIS UNITS
	1	R	73	04	09		CONN. REMOTE CONTROL	J04		3	R	74	04	11	CONN. REMOTE CONTROL
	1	F	76	01	01		CONN. CONTROL CH01	J01	S-REP-12	4	M	58	02	15	CONN. CONTROL TC VU-PANEL
	1	F	76	01	02		CONN. CONTROL CH01	J01		4	R	74	01	14	CONN. CONTROL BASIS UNITS
S-REP-02	4	M	53	02	15		CONN. CONTROL TC VU-PANEL	J02		4	R	74	04	12	CCNA. REMOTE CONTROL
	4	R	73	01	12		CONN. CONTROL BASIS UNITS	J01							

SIG.NAME	COLOR	TYPE	GR	EL	PT	S	DESCRIPTION OF ELEMENT	SIG.NAME	COLOR	TYPE	GR	EL	PT	S	DESCRIPTION OF ELEMENT	
S-REP-13	5	F	59	02	03		CONN. CONTROL TC VU-PANEL	J02	(CCNT.)	8	F	61	04	03	CONN. CH. FEED	JC4
	5	R	74	01	15		CONN. CONTROL BASIS UNITS	J01		8	F	62	04	03	CONN. CH. FEED	J04
	5	R	74	04	13		CONN. REMOTE CONTROL	J04		8	F	63	04	03	CONN. CH. FEED	J04
S-REP-14	4	M	59	02	15		CONN. CONTROL TO VL-PANEL	J02		8	F	64	04	03	CONN. CH. FEED	JC4
	4	R	74	01	16		CONN. CONTROL BASIS UNITS	J01		2	M	69	01	03	CCNA. MASTER- VU-PANEL	JC1
	4	R	74	04	14		CONN. REMOTE CONTROL	J04		2	F	69	03	03	CCNA. CH. FEED	J03
S-REP-15	6	F	60	02	03		CONN. CONTROL TC VU-PANEL	J02		2	F	69	04	03	CONN. LOWER CH. LEVEL	J04
	6	R	74	01	17		CONN. CONTROL BASIS UNITS	J01		2	M	69	06	17	CCNA. TAPE DECK	JC6
	6	R	74	04	15		CONN. REMOTE CONTROL	J04		2	F	70	01	03	CCNA. VU-PANEL	J01
S-REP-16	4	M	60	02	15		CONN. CONTROL TC VU-PANEL	J02		2	F	70	03	03	CONN. CH. FEED	JC3
	4	R	74	01	18		CONN. CONTROL BASIS UNITS	J01		2	F	71	04	03	CCNA. LOWER CH. LEVEL	J04
	4	R	74	04	16		CONN. REMOTE CONTROL	J04		2	B	72	01	12	CCNA. JUNCTION BOX	J01
S-REP-17	1	F	61	02	03		CONN. CONTROL TO VU-PANEL	J02		2	V	72	05	02	MASTER BOARD, OUTPUT 1	P01
	1	R	75	01	11		CONN. CONTROL BASIS UNITS	J01				90	01	24B	REPRODUCE AMP. CH XY	P01
	1	R	75	04	09		CONN. REMOTE CONTROL	J04				91	01	24B	SYNC. AMP. CHXY	P01
S-REP-18	4	M	61	02	15		CONN. CONTROL TC VU-PANEL	J02	S-REPM1R	2	B	72	01	13	CCNA. JUNCTION BOX	JC1
	4	R	75	01	12		CONN. CONTROL BASIS UNITS	J01		2	V	72	05	10	MASTER BOARD, OUTPUT 1	JC1
	4	R	75	04	10		CONN. REMOTE CONTROL	J04		2	R	73	01	57	CONN. CONTROL BASIS UNITS	JC1
S-REP-19	3	F	62	02	03		CONN. CONTROL TC VU-PANEL	J02		2	R	73	04	71	CONN. REMOTE CONTROL	JC4
	3	R	75	01	13		CONN. CONTROL BASIS UNITS	J01		2	R	74	04	71	CONN. REMOTE CONTROL	J04
	3	R	75	04	11		CONN. REMOTE CONTROL	J04		2	R	75	04	71	CONN. REMOTE CONTROL	J04
S-REP-20	4	M	62	02	15		CONN. CONTROL TC VU-PANEL	J02	S-REPM2	8	F	53	04	07	CONN. CH. FEED	J04
	4	R	75	01	14		CONN. CONTROL BASIS UNITS	J01		8	F	54	04	07	CONN. CH. FEED	JC4
	4	R	75	04	12		CONN. REMOTE CONTROL	J04		8	F	55	04	07	CONN. CH. FEED	JC4
S-REP-21	5	F	63	02	03		CONN. CONTROL TO VU-PANEL	J02		8	F	56	04	07	CONN. CH. FEED	J04
	5	R	75	01	15		CONN. CONTROL BASIS UNITS	J01		8	F	57	04	07	CONN. CH. FEED	JC4
	5	R	75	04	13		CONN. REMOTE CONTROL	J04		8	F	58	04	07	CONN. CH. FEED	J04
S-REP-22	4	M	63	02	15		CONN. CONTROL TC VU-PANEL	J02		8	F	59	04	07	CONN. CH. FEED	J04
	4	R	75	01	16		CONN. CONTROL BASIS UNITS	J01		8	F	60	04	07	CONN. CH. FEED	J04
	4	R	75	04	14		CONN. REMOTE CONTROL	J04		8	F	61	04	07	CONN. CH. FEED	JC4
S-REP-23	6	F	64	02	03		CONN. CONTROL TC VU-PANEL	J02		8	F	62	04	07	CONN. CH. FEED	J04
	6	R	75	01	17		CONN. CONTROL BASIS UNITS	J01		8	F	63	04	07	CONN. CH. FEED	J04
	6	R	75	04	15		CONN. REMOTE CONTROL	J04		8	F	64	04	07	CONN. CH. FEED	JC4
S-REP-24	4	M	64	02	15		CONN. CONTROL TO VU-PANEL	J02		8	F	69	01	07	CCNA. MASTER- VU-PANEL	J01
	4	R	75	01	18		CONN. CONTROL BASIS UNITS	J01		8	F	69	03	07	CONN. CH. FEED	JC3
	4	R	75	04	16		CONN. REMOTE CONTROL	J04		8	F	69	04	07	CONN. LOWER CH. LEVEL	J04
S-REPM1	8	F	53	04	03		CONN. CH. FEED	J04		8	F	70	01	07	CONN. VU-PANEL	JC1
	8	F	54	04	03		CONN. CH. FEED	J04		8	F	70	03	07	CONN. CH. FEED	JC3
	8	F	55	04	03		CONN. CH. FEED	J04		8	F	70	04	07	CONN. LOWER CH. LEVEL	J04
	8	F	56	04	03		CONN. CH. FEED	J04		8	F	71	01	07	CONN. VU-PANEL	JC1
	8	F	57	04	03		CONN. CH. FEED	J04		8	F	71	03	07	CONN. CH. FEED	JC3
	8	F	58	04	03		CONN. CH. FEED	J04		8	F	71	04	07	CONN. LOWER CH. LEVEL	J04
	8	F	59	04	03		CONN. CH. FEED	J04		8	B	72	01	32	CONN. JUNCTION BOX	J01
	8	F	60	04	03		CONN. CH. FEED	J04		8	V	72	06	02	MASTER BOARD, OUTPUT 2	P01
S-REPM2	8	B	72	01	33		CONN. JUNCTION BOX	JC1	S-REPM2R	8	B	72	01	33	CONN. JUNCTION BOX	JC1
										8	V	72	06	10	MASTER BOARD, OUTPUT 2	JC1
										8	R	73	01	75	CONN. CONTROL BASIS UNITS	JC1
										8	R	73	04	78	CONN. REMOTE CONTROL	JC4

SIG.NAME	COLOR	TYPE	GR	EL	PT	S	DESCRIPTION OF ELEMENT	SIG.NAME	COLOR	TYPE	GR	EL	PT	S	DESCRIPTION OF ELEMENT	
(CCNT.)	8	R	74	04	78		CONN. REMOTE CONTROL	J04	(CCNT.)	9	B	72	01	28	CCNA. JUNCTION BOX	J01
	8	R	75	04	78		CONN. REMOTE CONTROL	J04		9	V	72	06	03	MASTER BOARD, CLTPUT 2	
S-SYNM1	8	F	53	04	04		CONN. CH. FEED	J04				91	01	23A	SYNC. AMP. CHXY	PC1
	8	F	54	04	04		CONN. CH. FEED	J04	S-SYNM2R	9	B	72	01	29	CCNA. JUNCTION BOX	J01
	8	F	55	04	04		CONN. CH. FEED	J04		9	V	72	06	11	MASTER BOARD, CLTPUT 2	
	8	F	56	04	04		CONN. CH. FEED	J04		9	R	73	01	74	CCNA. CONTROL BASIS UNITS	JC1
	8	F	57	04	04		CONN. CH. FEED	J04		9	R	73	04	75	CCNA. REMOTE CONTROL	J04
	8	F	58	04	04		CONN. CH. FEED	J04		9	R	74	04	75	CCNA. REMOTE CONTROL	J04
	8	F	59	04	04		CONN. CH. FEED	J04		9	R	75	04	75	CCNA. REMOTE CONTROL	J04
	8	F	60	04	04		CONN. CH. FEED	J04								
	8	F	61	04	04		CONN. CH. FEED	J04	SCREEN	9	F	52	11	03	CCNA. CODE CHANNEL	J11
	8	F	62	04	04		CONN. CH. FEED	J04		9	F	52	11	06	CCNA. CODE CHANNEL	J11
8	F	63	04	04		CONN. CH. FEED	J04		9	F	52	11	09	CCNA. CODE CHANNEL	J11	
8	F	64	04	04		CONN. CH. FEED	J04									
3	M	69	01	04		CONN. MASTER- VU-PANEL	J01	SPCTERAS	6	B	72	02	09	CCNA. TAPE DECK	JC2	
3	F	69	03	04		CONN. CH. FEED	J03		6	V	72	03	18	MASTER BOARD 2		
3	F	69	04	04		CONN. LOWER CH. LEVEL	J04									
3	M	70	01	04		CONN. VU-PANEL	J01	Y-BIAHXY			92	01	09A	RECCRC AMP. CH XY	P01	
3	F	70	03	04		CONN. CH. FEED	J03				93	01	08B	HF DRIVER CH. XY	P01	
3	F	70	04	04		CONN. LOWER CH. LEVEL	J04									
3	M	71	01	04		CONN. VU-PANEL	J01	Y-BIALXY			92	01	10B	RECCRC AMP. CH XY	PC1	
3	F	71	03	04		CONN. CH. FEED	J03				93	01	09A	HF DRIVER CH. XY	P01	
3	F	71	04	04		CONN. LOWER CH. LEVEL	J04									
3	B	72	01	18		CONN. JUNCTION BOX	J01	Y-LCH	5	M	53	04	15	CCNA. CH. FEED	J04	
									5	M	54	04	15	CCNA. CH. FEED	J04	
									5	M	55	04	15	CCNA. CH. FEED	J04	
									5	M	56	04	15	CCNA. CH. FEED	J04	
S-SYNM1R	3	B	72	01	19		CONN. JUNCTION BOX	J01		5	M	57	04	15	CCNA. CH. FEED	J04
	3	V	72	05	11		MASTER BOARD, OUTPUT 1			5	M	58	04	15	CCNA. CH. FEED	JC4
	3	R	73	01	71		CONN. CONTROL BASIS UNITS	JC1		5	M	59	04	15	CCNA. CH. FEED	J04
	3	R	73	04	72		CONN. REMOTE CONTROL	J04		5	M	60	04	15	CCNA. CH. FEED	J04
	3	R	74	04	72		CONN. REMOTE CONTROL	J04		5	M	61	04	15	CCNA. CH. FEED	JC4
	3	R	75	04	72		CONN. REMOTE CONTROL	J04		5	M	62	04	15	CCNA. CH. FEED	J04
S-SYNM2	9	F	53	04	06		CONN. CH. FEED	J04		5	M	63	04	15	CCNA. CH. FEED	J04
	9	F	54	04	06		CONN. CH. FEED	J04		5	M	64	04	15	CCNA. CH. FEED	JC4
	9	F	55	04	06		CONN. CH. FEED	J04		5	M	69	03	15	CCNA. CH. FEED	JC3
	9	F	56	04	06		CONN. CH. FEED	J04		5	F	69	04	15	CCNA. LOWER CH. LEVEL	J04
	9	F	57	04	06		CONN. CH. FEED	J04		5	M	69	06	19	CCNA. TAPE DECK	JC6
	9	F	58	04	06		CONN. CH. FEED	J04		5	F	70	03	15	CCNA. CH. FEED	JC3
	9	F	59	04	06		CONN. CH. FEED	J04		5	F	70	04	15	CCNA. LOWER CH. LEVEL	J04
	9	F	60	04	06		CONN. CH. FEED	J04		5	M	71	03	15	CCNA. CH. FEED	JC3
	9	F	61	04	06		CONN. CH. FEED	J04		5	F	71	04	15	CCNA. LOWER CH. LEVEL	J04
	9	F	62	04	06		CONN. CH. FEED	J04				90	01	29A	REPRCDUCE AMP. CH XY	P01
	9	F	63	04	06		CONN. CH. FEED	J04				91	01	29A	SYNC. AMP. CHXY	PC1
	9	F	64	04	06		CONN. CH. FEED	J04				92	01	29A	RECCRE AMP. CH XY	P01
	9	F	69	01	06		CONN. MASTER- VU-PANEL	J01				93	01	29A	HF DRIVER CH. XY	P01
	9	F	69	03	06		CONN. CH. FEED	JC3				94	01	29A	MASTER OSCILLATOR	PC1
	9	F	69	04	06		CONN. LOWER CH. LEVEL	J04	Y-MOD1	3		69	06	08	CCNA. TAPE DECK	J06
	9	F	70	01	06		CONN. VU-PANEL	J01								
	9	F	70	03	06		CONN. CH. FEED	J03	Y-MUTE	7	M	53	04	13	CCNA. CH. FEED	J04
	9	F	70	04	06		CONN. LOWER CH. LEVEL	J04		7	M	54	04	13	CCNA. CH. FEED	J04
	9	F	71	01	06		CONN. VU-PANEL	J01		7	M	55	04	13	CCNA. CH. FEED	J04
	9	F	71	03	06		CONN. CH. FEED	JC3		7	M	56	04	13	CCNA. CH. FEED	J04
	9	F	71	04	06		CONN. LOWER CH. LEVEL	J04		7	M	57	04	13	CCNA. CH. FEED	J04

SIG-NAME	COLOR	TYPE	GR	EL	PT	S	DESCRIPTION OF ELEMENT	SIG-NAME	COLOR	TYPE	GR	EL	PT	S	DESCRIPTION OF ELEMENT	
(CONT.)	7	M	58	04	13		CONN. CH. FEED	J04	Y-RECB6	3	M	55	05	10	CCNN. DELAY UNIT	J05
	7	M	59	04	13		CONN. CH. FEED	J04								
	7	M	60	04	13		CONN. CH. FEED	J04	Y-RECB7	9	F	56	05	02	CCNN. DELAY UNIT	J05
	7	M	61	04	13		CONN. CH. FEED	J04								
	7	M	62	04	13		CONN. CH. FEED	J04	Y-RECB08	3	M	56	05	10	CCNN. DELAY UNIT	J05
	7	M	63	04	13		CONN. CH. FEED	J04								
	7	M	64	04	13		CONN. CH. FEED	J04	Y-RECB09	9	F	57	05	02	CCNN. DELAY UNIT	J05
	7	M	69	03	13		CONN. CH. FEED	J03								
	7	F	69	04	13		CONN. LOWER CH. LEVEL	J04	Y-RECB10	3	M	57	05	10	CCNN. DELAY UNIT	J05
	7	M	69	06	20		CONN. TAPE DECK	J06								
	7	M	70	03	13		CONN. CH. FEED	J03	Y-RECB11	9	F	58	05	02	CCNN. DELAY UNIT	J05
	7	F	70	04	13		CONN. LOWER CH. LEVEL	J04								
	7	M	71	03	13		CONN. CH. FEED	J03	Y-RECB12	3	M	58	05	10	CONN. DELAY UNIT	J05
	7	F	71	04	13		CONN. LOWER CH. LEVEL	J04								
	9	B	72	02	08		CONN. TAPE DECK	J02	Y-RECB13	9	F	59	05	02	CCNN. DELAY UNIT	J05
	9	V	72	03	14		MASTER BOARD 2									
			90	01	25A		REPRODUCE AMP. CH XY	P01	Y-RECB14	3	M	59	05	10	CONN. DELAY UNIT	J05
			91	01	25A		SYNC. AMP. CHXY	P01								
			92	01	25A		RECORD AMP. CH XY	P01	Y-RECB15	9	F	60	05	02	CCNN. DELAY UNIT	J05
			93	01	25A		HF DRIVER CH. XY	P01								
									Y-RECB16	3	M	60	05	10	CCNN. DELAY UNIT	J05
Y-RCURXY			92	01	27A		RECORD AMP. CH XY	P01								
			93	01	28B		HF DRIVER CH. XY	P01	Y-RECB17	9	F	61	05	02	CONN. DELAY UNIT	J05
Y-REC	6	F	53	04	12		CONN. CH. FEED	J04	Y-RECB18	3	M	61	05	10	CONN. DELAY UNIT	J05
	6	F	54	04	12		CONN. CH. FEED	J04								
	6	F	55	04	12		CONN. CH. FEED	J04	Y-RECB19	9	F	62	05	02	CCNN. DELAY UNIT	J05
	6	F	56	04	12		CONN. CH. FEED	J04								
	6	F	57	04	12		CONN. CH. FEED	J04	Y-RECB20	3	M	62	05	10	CCNN. DELAY UNIT	J05
	6	F	58	04	12		CONN. CH. FEED	J04								
	6	F	59	04	12		CONN. CH. FEED	J04	Y-RECB21	9	F	63	05	02	CONN. DELAY UNIT	J05
	6	F	60	04	12		CONN. CH. FEED	J04								
	6	F	61	04	12		CONN. CH. FEED	J04	Y-RECB22	3	M	63	05	10	CCNN. DELAY UNIT	J05
	6	F	62	04	12		CONN. CH. FEED	J04								
	6	F	63	04	12		CONN. CH. FEED	J04	Y-RECB23	9	F	64	05	02	CONN. DELAY UNIT	J05
	6	F	64	04	12		CONN. CH. FEED	J04								
	6	F	69	03	12		CONN. CH. FEED	J03	Y-RECB24	3	M	64	05	10	CONN. DELAY UNIT	J05
	6	F	69	04	12		CONN. LOWER CH. LEVEL	J04								
	6	M	69	06	11		CONN. TAPE DECK	J06	Y-RECCXY			92	01	20B	RECCRC AMP. CH XY	P01
	6	F	70	03	12		CONN. CH. FEED	J03				93	01	20B	HF DRIVER CH. XY	P01
	6	F	70	04	12		CONN. LOWER CH. LEVEL	J04								
	6	F	71	03	12		CONN. CH. FEED	J03	Y-RECC01	9	F	53	05	04	CCNN. DELAY UNIT	J05
	6	F	71	04	12		CONN. LOWER CH. LEVEL	J04								
			93	01	17A		HF DRIVER CH. XY	P01	Y-RECC02	3	M	53	05	12	CONN. DELAY UNIT	J05
Y-RECRXY			93	01	22B		HF DRIVER CH. XY	P01	Y-RECC03	9	F	54	05	04	CONN. DELAY UNIT	J05
Y-RECB01	9	F	53	05	02		CONN. DELAY UNIT	J05	Y-RECC04	3	M	54	05	12	CONN. DELAY UNIT	J05
Y-RECB02	3	M	53	05	10		CONN. DELAY UNIT	J05	Y-RECC05	9	F	55	05	04	CONN. DELAY UNIT	J05
Y-RECB03	9	F	54	05	02		CONN. DELAY UNIT	J05	Y-RECC06	3	M	55	05	12	CCNN. DELAY UNIT	J05
Y-RECB04	3	M	54	05	10		CONN. DELAY UNIT	J05	Y-RECC07	9	F	56	05	04	CONN. DELAY UNIT	J05
Y-RECB05	9	F	55	05	02		CONN. DELAY UNIT	J05	Y-RECC08	3	M	56	05	12	CCNN. DELAY UNIT	J05

SIG-NAME	COLOR	TYPE	GR	EL	PT	S	DESCRIPTION OF ELEMENT	SIG-NAME	COLOR	TYPE	GR	EL	PT	S	DESCRIPTION OF ELEMENT	
Y-RECC09	9	F	57	05	04		CONN. DELAY UNIT	J05	Y-RECE12	3	M	58	05	09	CCNN. DELAY UNIT	J05
Y-RECD10	3	M	57	05	12		CONN. DELAY UNIT	J05	Y-RECE13	9	F	59	05	01	CCNN. DELAY UNIT	J05
Y-RECD11	9	F	58	05	04		CONN. DELAY UNIT	J05	Y-RECE14	3	M	59	05	09	CCNN. DELAY UNIT	J05
Y-RECD12	3	M	58	05	12		CONN. DELAY UNIT	J05	Y-RECE15	9	F	60	05	01	CCNN. DELAY UNIT	J05
Y-RECD13	9	F	59	05	04		CONN. DELAY UNIT	J05	Y-RECE16	3	M	60	05	09	CCNN. DELAY UNIT	J05
Y-RECD14	3	M	59	05	12		CONN. DELAY UNIT	J05	Y-RECE17	9	F	61	05	01	CCNN. DELAY UNIT	J05
Y-RECD15	9	F	60	05	04		CONN. DELAY UNIT	J05	Y-RECE18	3	M	61	05	09	CCNN. DELAY UNIT	J05
Y-RECD16	3	M	60	05	12		CONN. DELAY UNIT	J05	Y-RECE19	9	F	62	05	01	CCNN. DELAY UNIT	J05
Y-RECD17	9	F	61	05	04		CONN. DELAY UNIT	J05	Y-RECE20	3	M	62	05	09	CCNN. DELAY UNIT	J05
Y-RECD18	3	M	61	05	12		CONN. DELAY UNIT	J05	Y-RECE21	9	F	63	05	01	CCNN. DELAY UNIT	J05
Y-RECD19	9	F	62	05	04		CONN. DELAY UNIT	J05	Y-RECE22	3	M	63	05	09	CONN. DELAY UNIT	J05
Y-RECD20	3	M	62	05	12		CONN. DELAY UNIT	J05	Y-RECE23	9	F	64	05	01	CCNN. DELAY UNIT	J05
Y-RECD21	9	F	63	05	04		CONN. DELAY UNIT	J05	Y-RECE24	3	M	64	05	09	CONN. DELAY UNIT	J05
Y-RECD22	3	M	63	05	12		CONN. DELAY UNIT	J05	Y-RECHXY			91	01	11A	SYNC. AMP. CHXY	P01
Y-RECD23	9	F	64	05	04		CONN. DELAY UNIT	J05				92	01	12B	RECORD AMP. CH XY	P01
Y-RECD24	3	M	64	05	12		CONN. DELAY UNIT	J05	Y-RECIXY			90	01	20B	REPRCUCUE AMP. CH XY	P01
												91	01	20B	SYNC. AMP. CHXY	P01
Y-RECEXY			93	01	21A		HF DRIVER CH. XY	P01	Y-RECI01	9	F	53	05	03	CCNN. DELAY UNIT	J05
Y-RECE01	9	F	53	05	01		CONN. DELAY UNIT	J05	Y-RECI02	3	M	53	05	11	CCNN. DELAY UNIT	J05
Y-RECE02	3	M	53	05	09		CONN. DELAY UNIT	J05	Y-RECI03	9	F	54	05	03	CCNN. DELAY UNIT	J05
Y-RECE03	9	F	54	05	01		CONN. DELAY UNIT	J05	Y-RECI04	3	M	54	05	11	CCNN. DELAY UNIT	J05
Y-RECE04	3	M	54	05	09		CONN. DELAY UNIT	J05	Y-RECI05	9	F	55	05	03	CONN. DELAY UNIT	J05
Y-RECE05	9	F	55	05	01		CONN. DELAY UNIT	J05	Y-RECI06	3	M	55	05	11	CCNN. DELAY UNIT	J05
Y-RECE06	3	M	55	05	09		CONN. DELAY UNIT	J05	Y-RECI07	9	F	56	05	03	CONN. DELAY UNIT	J05
Y-RECE07	9	F	56	05	01		CONN. DELAY UNIT	J05	Y-RECI08	3	M	56	05	11	CCNN. DELAY UNIT	J05
Y-RECE08	3	M	56	05	09		CCNN. DELAY UNIT	J05	Y-RECI09	9	F	57	05	03	CCNN. DELAY UNIT	J05
Y-RECE09	9	F	57	05	01		CONN. DELAY UNIT	J05	Y-RECI10	3	M	57	05	11	CCNN. DELAY UNIT	J05
Y-RECE10	3	M	57	05	09		CONN. DELAY UNIT	J05	Y-RECI11	9	F	58	05	03	CONN. DELAY UNIT	J05
Y-RECE11	9	F	58	05	01		CONN. DELAY UNIT	J05	Y-RECI12	3	M	58	05	11	CCNN. DELAY UNIT	J05

SIG.NAME	COLOR	TYPE	GR	EL	PT	S	DESCRIPTION OF ELEMENT	SIG.NAME	COLOR	TYPE	GR	EL	PT	S	DESCRIPTION OF ELEMENT	
Y-REC113	9	F	59	05	03		CONN. DELAY UNIT	J05	(CCNT.)	6	F	54	04	23	CCNA. CH. FEED	J04
Y-REC114	3	M	59	05	11		CONN. DELAY UNIT	J05		6	F	55	04	23	CCNA. CH. FEED	J04
Y-REC115	9	F	60	05	03		CONN. DELAY UNIT	J05		6	F	56	04	23	CCNN. CH. FEED	J04
Y-REC116	3	M	60	05	11		CONN. DELAY UNIT	J05		6	F	57	04	23	CCNA. CH. FEED	J04
Y-REC117	9	F	61	05	03		CONN. DELAY UNIT	J05		6	F	58	04	23	CCNA. CH. FEED	J04
Y-REC118	3	M	61	05	11		CONN. DELAY UNIT	J05		6	F	59	04	23	CONN. CH. FEED	J04
Y-REC119	9	F	62	05	03		CONN. DELAY UNIT	J05		6	F	60	04	23	CCNN. CH. FEED	J04
Y-REC120	3	M	62	05	11		CONN. DELAY UNIT	J05		6	F	61	04	23	CCNA. CH. FEED	J04
Y-REC121	9	F	63	05	03		CONN. DELAY UNIT	J05		6	F	62	04	23	CCNN. CH. FEED	J04
Y-REC122	3	M	63	05	11		CONN. DELAY UNIT	J05		6	F	63	04	23	CCNA. CH. FEED	J04
Y-REC123	9	F	64	05	03		CONN. DELAY UNIT	J05	YERAHXY			93	01	01A	HF DRIVER CH. XY	P01
Y-REC124	3	M	64	05	11		CONN. DELAY UNIT	J05	YERAHHC1	0	R	52	05	16	CCNA. ERASE HEAD CH01-16	J05
Y-RECLXY			91	01	10B		SYNC. AMP. CHXY	P01		0	M	53	03	21	CONN. HEAD SIGNALS	J03
Y-REHEAR	5	B	72	02	02		CONN. TAPE DECK	J02	YERAHHC2	0	R	52	05	01	CCNA. ERASE HEAD CH01-16	J05
	5	V	72	03	15		MASTER BOARD 2	J02		0	F	53	03	24	CONN. HEAD SIGNALS	J03
Y-SPEEXY			90	01	28B		REPRODUCE AMP. CH XY	P01	YERAHHC3	0	R	52	05	31	CCNA. ERASE HEAD CH01-16	J05
			91	01	28B		SYNC. AMP. CHXY	P01		0	M	54	03	21	CONN. HEAD SIGNALS	J03
			92	01	28B		RECORD AMP. CH XY	P01	YERAHHC4	0	R	52	05	18	CCNA. ERASE HEAD CH01-16	J05
YAC-BIAS	4	F	53	04	24		CONN. CH. FEED	J04		0	F	54	03	24	CONN. HEAD SIGNALS	J03
	4	F	54	04	24		CONN. CH. FEED	J04	YERAHHC5	0	R	52	05	03	CCNN. ERASE HEAD CH01-16	J05
	4	F	55	04	24		CONN. CH. FEED	J04		0	M	55	03	21	CCNA. HEAD SIGNALS	J03
	4	F	56	04	24		CONN. CH. FEED	J04	YERAHHC6	0	R	52	05	33	CCNN. ERASE HEAD CH01-16	J05
	4	F	57	04	24		CONN. CH. FEED	J04		0	F	55	03	24	CCNA. HEAD SIGNALS	J03
	4	F	58	04	24		CONN. CH. FEED	J04	YERAHHC7	0	R	52	05	20	CCNN. ERASE HEAD CH01-16	J05
	4	F	59	04	24		CONN. CH. FEED	J04		0	M	56	03	21	CONN. HEAD SIGNALS	J03
	4	F	60	04	24		CONN. CH. FEED	J04	YERAHHC8	0	R	52	05	05	CCNA. ERASE HEAD CH01-16	J05
	4	F	61	04	24		CONN. CH. FEED	J04		0	F	56	03	24	CCNA. HEAD SIGNALS	J03
	4	F	62	04	24		CONN. CH. FEED	J04	YERAHHC9	0	R	52	05	35	CCNA. ERASE HEAD CH01-16	J05
	4	F	63	04	24		CONN. CH. FEED	J04		0	M	57	03	21	CCNA. HEAD SIGNALS	J03
	4	F	64	04	24		CONN. CH. FEED	J04	YERAHHC10	0	R	52	05	22	CCNA. ERASE HEAD CH01-16	J05
	4	F	69	03	24		CONN. CH. FEED	J04		0	F	57	03	24	CCNA. HEAD SIGNALS	J03
	4	F	69	04	24		CONN. LOWER CH. LEVEL	J04	YERAHHC11	0	R	52	05	07	CCNA. ERASE HEAD CH01-16	J05
	4	F	70	03	24		CONN. CH. FEED	J03		0	M	58	03	21	CONN. HEAD SIGNALS	J03
	4	F	70	04	24		CONN. LOWER CH. LEVEL	J04	YERAHHC12	0	R	52	05	37	CCNA. ERASE HEAD CH01-16	J05
	4	F	71	03	24		CONN. CH. FEED	J03								
	4	F	71	04	24		CONN. LOWER CH. LEVEL	J04								
			93	01	03A		HF DRIVER CH. XY	P01								
			94	01	05A		MASTER OSCILLATOR	P01								
YAC-ERAS	6	F	53	04	23		CONN. CH. FEED	J04	YERAHHC12	0	R	52	05	37	CCNA. ERASE HEAD CH01-16	J05
								J04								

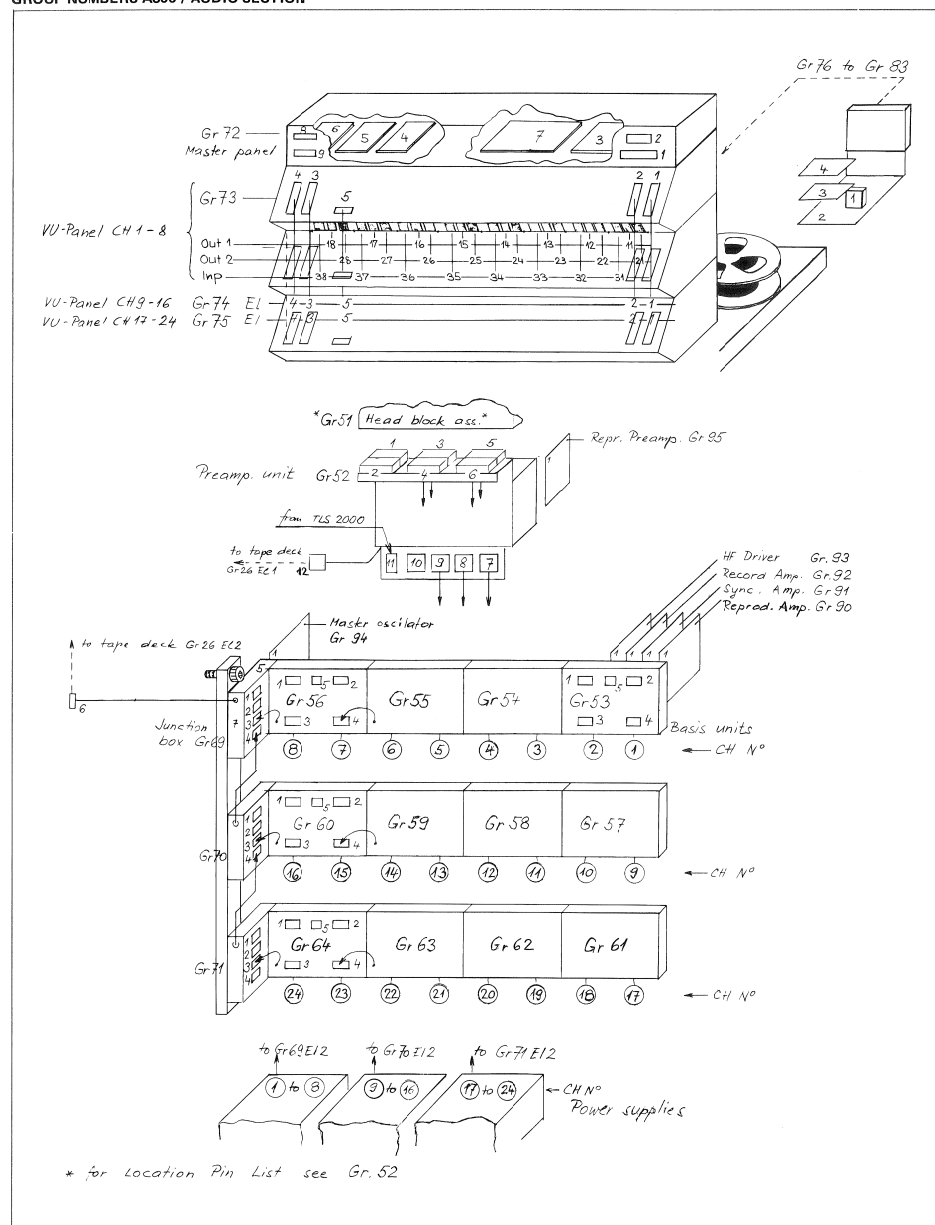
SIG-NAME	COLCR	TYPE	GR	EL	PT	S	DESCRIPTION OF ELEMENT	SIG-NAME	COLOR	TYPE	GR	EL	PT	S	DESCRIPTION OF ELEMENT
(CCNT.)	0	F	58	03	24		CONN. HEAD SIGNALS	J03	YERAHLC1	6	R	52	05	17	CCNA. ERASE HEAD CH01-16
YERAHHC13	0	R	52	05	24		CONN. ERASE HEAD CH01-16	J05		6	M	53	03	22	CCNA. HEAD SIGNALS
	0	M	59	03	21		CONN. HEAD SIGNALS	J03	YERAHLC2	6	R	52	05	02	CCNA. ERASE HEAD CH01-16
YERAHHC14	0	R	52	05	09		CONN. ERASE HEAD CH01-16	J05		6	F	53	03	23	CCNA. HEAD SIGNALS
	0	F	59	03	24		CONN. HEAD SIGNALS	J03	YERAHLC3	6	R	52	05	32	CCNA. ERASE HEAD CH01-16
YERAHHC15	0	R	52	05	39		CONN. ERASE HEAD CH01-16	J05		6	M	54	03	22	CCNA. HEAD SIGNALS
	0	M	60	03	21		CONN. HEAD SIGNALS	J03	YERAHLC4	6	R	52	05	19	CCNA. ERASE HEAD CH01-16
YERAHHC16	0	R	52	05	26		CONN. ERASE HEAD CH01-16	J05		6	F	54	03	23	CCNA. HEAD SIGNALS
	0	F	60	03	24		CONN. HEAD SIGNALS	J03	YERAHLC5	6	R	52	05	04	CCNA. ERASE HEAD CH01-16
YERAHHC17	0	R	52	06	16		CONN. ERASE HEAD CH17-32	J06		6	M	55	03	22	CCNA. HEAD SIGNALS
	0	M	61	03	21		CONN. HEAD SIGNALS	J03	YERAHLC6	6	R	52	05	34	CCNA. ERASE HEAD CH01-16
YERAHHC18	0	R	52	06	01		CONN. ERASE HEAD CH17-32	J06		6	F	55	03	23	CCNA. HEAD SIGNALS
	0	F	61	03	24		CONN. HEAD SIGNALS	J03	YERAHLC7	6	R	52	05	21	CCNA. ERASE HEAD CH01-16
YERAHHC19	0	R	52	06	31		CONN. ERASE HEAD CH17-32	J06		6	M	56	03	22	CCNA. HEAD SIGNALS
	0	M	62	03	21		CONN. HEAD SIGNALS	J03	YERAHLC8	6	R	52	05	06	CCNA. ERASE HEAD CH01-16
YERAHHC20	0	R	52	06	18		CONN. ERASE HEAD CH17-32	J06		6	F	56	03	23	CCNA. HEAD SIGNALS
	0	F	62	03	24		CONN. HEAD SIGNALS	J03	YERAHLC9	6	R	52	05	36	CCNA. ERASE HEAD CH01-16
YERAHHC21	0	R	52	06	03		CONN. ERASE HEAD CH17-32	J06		6	M	57	03	22	CCNA. HEAD SIGNALS
	0	M	63	03	21		CONN. HEAD SIGNALS	J03	YERAHLC10	6	R	52	05	23	CCNA. ERASE HEAD CH01-16
YERAHHC22	0	R	52	06	33		CONN. ERASE HEAD CH17-32	J06		6	F	57	03	23	CCNA. HEAD SIGNALS
	0	F	63	03	24		CONN. HEAD SIGNALS	J03	YERAHLC11	6	R	52	05	08	CCNA. ERASE HEAD CH01-16
YERAHHC23	0	R	52	06	20		CONN. ERASE HEAD CH17-32	J06		6	M	58	03	22	CCNA. HEAD SIGNALS
	0	M	64	03	21		CONN. HEAD SIGNALS	J03	YERAHLC12	6	R	52	05	38	CCNA. ERASE HEAD CH01-16
YERAHHC24	0	R	52	06	05		CONN. ERASE HEAD CH17-32	J06		6	F	58	03	23	CCNA. HEAD SIGNALS
	0	F	64	03	24		CONN. HEAD SIGNALS	J03	YERAHLC13	6	R	52	05	25	CCNA. ERASE HEAD CH01-16
YERAHHC25	0	R	52	06	35		CONN. ERASE HEAD CH17-32	J06		6	M	59	03	22	CCNA. HEAD SIGNALS
YERAHHC26	0	R	52	06	22		CONN. ERASE HEAD CH17-32	J06	YERAHLC14	6	R	52	05	10	CCNA. ERASE HEAD CH01-16
								J06		6	F	59	03	23	CCNA. HEAD SIGNALS
YERAHHC27	0	R	52	06	07		CONN. ERASE HEAD CH17-32	J06	YERAHLC15	6	R	52	05	40	CCNA. ERASE HEAD CH01-16
								J06		6	M	60	03	22	CCNA. HEAD SIGNALS
YERAHHC28	0	R	52	06	37		CONN. ERASE HEAD CH17-32	J06	YERAHLC16	6	R	52	05	27	CCNA. ERASE HEAD CH01-16
								J06		6	F	60	03	23	CCNA. HEAD SIGNALS
YERAHHC29	0	R	52	06	24		CONN. ERASE HEAD CH17-32	J06	YERAHLC17	6	R	52	06	17	CCNA. ERASE HEAD CH17-32
								J06		6	M	61	03	22	CCNA. HEAD SIGNALS
YERAHHC30	0	R	52	06	09		CONN. ERASE HEAD CH17-32	J06	YERAHLC18	6	R	52	06	02	CCNA. ERASE HEAD CH17-32
								J06		6	F	61	03	23	CCNA. HEAD SIGNALS
YERAHHC31	0	R	52	06	39		CONN. ERASE HEAD CH17-32	J06	YERAHLC19	6	R	52	06	32	CCNA. ERASE HEAD CH17-32
								J06		6	M	62	03	22	CCNA. HEAD SIGNALS
YERAHHC32	0	R	52	06	26		CONN. ERASE HEAD CH17-32	J06							
YERAHLCXY			93	01	06B		HF DRIVER CH. XY	P01	YERAHLC19	6	R	52	06	32	CCNA. ERASE HEAD CH17-32
										6	M	62	03	22	CCNA. HEAD SIGNALS

SIG.NAME	COLOR	TYPE	GR	EL	PT	S	DESCRIPTION OF ELEMENT	SIG.NAME	COLOR	TYPE	GR	EL	PT	S	DESCRIPTION OF ELEMENT		
YERAH20	6	R	52	06	19		CONN. ERASE HEAD CH17-32	J06	(CCAT.)	0	F	56	03	19	CONN. HEAD SIGNALS	J03	
	6	F	62	03	23		CONN. HEAD SIGNALS	J03		4	M	56	04	14	CCNA. CH. FEED	J04	
YERAH21	6	R	52	06	04		CONN. ERASE HEAD CH17-32	J06		4	F	69	02	14	CCNA. POWER SUPPLY	J02	
	6	M	63	03	22		CONN. HEAD SIGNALS	J03		4	M	69	03	14	CONN. CH. FEED	J03	
												94	01	15A	MASTER OSCILLATOR	P01	
YERAH22	6	R	52	06	34		CONN. ERASE HEAD CH17-32	J06	0.0	-B	4	M	57	04	14	CONN. CH. FEED	J04
	6	F	63	03	23		CONN. HEAD SIGNALS	J03		4	M	58	04	14	CONN. CH. FEED	J04	
										4	M	59	04	14	CONN. CH. FEED	J04	
YERAH23	6	R	52	06	21		CONN. ERASE HEAD CH17-32	J06		0	F	60	03	19	CONN. HEAD SIGNALS	J03	
	6	M	64	03	22		CONN. HEAD SIGNALS	J03		4	M	60	04	14	CONN. CH. FEED	J04	
										4	F	70	02	14	CCNA. POWER SUPPLY	J02	
YERAH24	6	R	52	06	06		CONN. ERASE HEAD CH17-32	J06		4	M	70	03	14	CONN. CH. FEED	J03	
	6	F	64	03	23		CONN. HEAD SIGNALS	J03	0.0	-C	4	M	61	04	14	CONN. CH. FEED	J04
										4	M	62	04	14	CONN. CH. FEED	J04	
YERAH25	6	R	52	06	36		CONN. ERASE HEAD CH17-32	J06		4	M	63	04	14	CONN. CH. FEED	J04	
YERAH26	6	R	52	06	23		CONN. ERASE HEAD CH17-32	J06		0	F	64	03	19	CONN. HEAD SIGNALS	J03	
										4	M	64	04	14	CONN. CH. FEED	J04	
YERAH27	6	R	52	06	08		CONN. ERASE HEAD CH17-32	J06		4	F	71	02	14	CONN. POWER SUPPLY	J02	
										4	M	71	03	14	CONN. CH. FEED	J03	
YERAH28	6	R	52	06	38		CONN. ERASE HEAD CH17-32	J06	0.0	-Z			90	01	15A	REPRODUCE AMP. CH XY	PC1
YERAH29	6	R	52	06	25		CONN. ERASE HEAD CH17-32	J06					91	01	15A	SYNC. AMP. CHXY	P01
													92	01	15A	RECORD AMP. CH XY	P01
YERAH30	6	R	52	06	10		CONN. ERASE HEAD CH17-32	J06					93	01	15A	HF DRIVER CH. XY	P01
YERAH31	6	R	52	06	40		CONN. ERASE HEAD CH17-32	J06	0.0-DIGA	0	F	53	02	11	CCNA. CONTROL TC VU-PANEL	J02	
YERAH32	6	R	52	06	27		CONN. ERASE HEAD CH17-32	J06		0	F	53	04	01	CONN. CH. FEED	J04	
										0	F	54	02	11	CONN. CONTROL TC VU-PANEL	J02	
										0	F	54	04	01	CONN. CH. FEED	J04	
YPS-REC	3	M	53	04	16		CONN. CH. FEED	J04		0	F	55	02	11	CONN. CONTROL TC VU-PANEL	J02	
	3	M	54	04	16		CONN. CH. FEED	J04		0	F	55	04	01	CONN. CH. FEED	J04	
	3	M	55	04	16		CONN. CH. FEED	J04		0	F	56	02	11	CCNA. CONTROL TC VU-PANEL	J02	
	3	M	56	04	16		CONN. CH. FEED	J04		0	F	56	04	01	CONN. CH. FEED	J04	
	3	M	57	04	16		CONN. CH. FEED	J04		0	F	56	05	06	CCNA. DELAY UNIT	J05	
	3	M	58	04	16		CONN. CH. FEED	J04		0	M	69	01	01	CCNA. MASTER- VU-PANEL	J01	
	3	M	59	04	16		CONN. CH. FEED	J04		0	F	69	01	23	CONN. MASTER- VU-PANEL	J01	
	3	M	60	04	16		CONN. CH. FEED	J04		0	F	69	02	01	CCNA. POWER SUPPLY	J02	
	3	M	61	04	16		CONN. CH. FEED	J04		0	F	69	03	01	CONN. CH. FEED	J03	
	3	M	62	04	16		CONN. CH. FEED	J04		0	B	72	01	04	CONN. JUNCTION BOX	J01	
	3	M	63	04	16		CONN. CH. FEED	J04		0	B	72	01	05	CONN. JUNCTION BOX	J01	
	3	M	64	04	16		CONN. CH. FEED	J04		0	B	72	01	22	CONN. JUNCTION BOX	J01	
	3	M	69	03	16		CONN. CH. FEED	J03		0	V	72	03	20	MASTER BOARD 2		
	3	F	69	04	16		CONN. LOWER CH. LEVEL	J04		0	V	72	04	08	MASTER BOARD 3		
	3	M	69	06	12		CONN. TAPE DECK	J06		0	V	72	04	09	MASTER BOARD 3		
	3	M	70	03	16		CONN. CH. FEED	J03		0	V	72	04	10	MASTER BOARD 3		
	3	F	70	04	16		CONN. LOWER CH. LEVEL	J04		0	R	73	01	01	CONN. CONTROL BASIS UNITS	J01	
	3	M	71	03	16		CONN. CH. FEED	J03		0	R	73	01	53	CONN. CONTROL BASIS UNITS	J01	
	3	F	71	04	16		CONN. LOWER CH. LEVEL	J04		0	R	73	04	53	CONN. REMOTE CONTROL	J04	
			93	01	18B		HF DRIVER CH. XY	P01		0	B	73	05	15	CONN. NOISE REDUCTION SYST.	J05	
0.0	-A	0	R	52	05	30	CONN. ERASE HEAD CH01-16	J05					94	01	19A	MASTER OSCILLATOR	P01
	4	M	53	04	14		CONN. CH. FEED	J04	0.0-DIGB		F	57	02	11	CONN. CONTROL TC VU-PANEL	J02	
	4	M	54	04	14		CONN. CH. FEED	J04		0	F	57	04	01	CONN. CH. FEED	J04	
	4	M	55	04	14		CONN. CH. FEED	J04			F	58	02	11	CONN. CONTROL TC VU-PANEL	J02	
								./.								./.	

SIG.NAME	COLOR	TYPE	GR	EL	PT	S	DESCRIPTION OF ELEMENT	SIG.NAME	COLOR	TYPE	GR	EL	PT	S	DESCRIPTION OF ELEMENT	
(CONT.)	0	F	58	04	01		CONN. CH. FEED	J04	0-ERAS	5	F	53	04	21	CCNN. CH. FEED	J04
		F	59	02	11		CONN. CONTROL TO VU-PANEL	J02		5	F	54	04	21	CCNN. CH. FEED	J04
	0	F	59	04	01		CONN. CH. FEED	J04		5	F	55	04	21	CCNN. CH. FEED	J04
		F	60	02	11		CONN. CONTROL TC VU-PANEL	J02		5	F	56	04	21	CCNN. CH. FEED	J04
	0	F	60	04	01		CONN. CH. FEED	J04		5	F	57	04	21	CCNN. CH. FEED	J04
	0	M	70	01	01		CONN. VU-PANEL	J01		5	F	58	04	21	CCNN. CH. FEED	J04
	0	F	70	01	23		CONN. VU-PANEL	J01		5	F	59	04	21	CCNN. CH. FEED	J04
	0	F	70	02	01		CONN. POWER SUPPLY	J02		5	F	60	04	21	CCNN. CH. FEED	J04
	0	F	70	03	01		CONN. CH. FEED	J03		5	F	61	04	21	CCNN. CH. FEED	J04
	0	R	74	01	01		CONN. CONTROL BASIS UNITS	J01		5	F	62	04	21	CCNN. CH. FEED	J04
	0	R	74	01	53		CONN. CONTROL BASIS UNITS	J01		5	F	63	04	21	CCNN. CH. FEED	J04
	0	R	74	04	53		CONN. REMOTE CONTROL	J04		5	F	64	04	21	CCNN. CH. FEED	J04
	0	B	74	05	15		CONN. NOISE REDUCTION SYST.	J05		5	F	69	03	21	CCNN. CH. FEED	J03
										5	F	69	04	21	CCNN. LOWER CH. LEVEL	J04
0.0-DIGC		F	61	02	11		CONN. CONTROL TC VU-PANEL	J02		5	F	70	03	21	CCNN. CH. FEED	J03
	0	F	61	04	01		CONN. CH. FEED	J04		5	F	70	04	21	CONN. LOWER CH. LEVEL	J04
		F	62	02	11		CONN. CONTROL TO VU-PANEL	J02		5	F	71	03	21	CCNN. CH. FEED	J03
	0	F	62	04	01		CONN. CH. FEED	J04		5	F	71	04	21	CCNN. LOWER CH. LEVEL	J04
		F	63	02	11		CONN. CONTROL TO VU-PANEL	J02				93	01	02B	HF DRIVER CH. XY	PC1
	0	F	63	04	01		CONN. CH. FEED	J04				94	01	03A	MASTER OSCILLATOR	PC1
		F	64	02	11		CONN. CONTROL TC VU-PANEL	J02	0-KTLS	0	V	72	07	25	TLS SWITCH BOARD	
	0	F	64	04	01		CONN. CH. FEED	J04		0	A	72	09	14	CONNECTOR EXPANSION UNIT	
	0	M	71	01	01		CONN. VU-PANEL	J01	0-LTLS	0	V	72	03	13	MASTER BOARD 2	
	0	F	71	01	23		CONN. VU-PANEL	J01		0	V	72	07	17	TLS SWITCH BOARD	
	0	F	71	02	01		CONN. POWER SUPPLY	J02		0	V	72	07	18	TLS SWITCH BOARD	
	0	R	75	01	01		CONN. CONTROL BASIS UNITS	J01		0	A	72	09	02	CONNECTOR EXPANSION UNIT	
	0	R	75	01	53		CONN. CONTROL BASIS UNITS	J01		0	A	72	09	03	CONNECTOR EXPANSION UNIT	
	0	R	75	04	53		CONN. REMOTE CONTROL	J04		0	A	72	09	20	CONNECTOR EXPANSION UNIT	
	0	B	75	05	15		CONN. NOISE REDUCTION SYST.	J05		0	A	72	09	21	CONNECTOR EXPANSION UNIT	
										0	A	72	09	22	CONNECTOR EXPANSION UNIT	
0.0-DIGZ			90	01	19A		REPRODUCE AMP. CH XY	P01	0-PAM-XY			90	01	09A	REPRCCD. PREAMP. CH XY	PC1
			91	01	19A		SYNC. AMP. CHXY	P01				91	01	09A	SYNC. AMP. CHXY	P01
			92	01	19A		RECORD AMP. CH XY	P01								
			93	01	19A		HF DRIVER CH. XY	PC1								
0-BIAS	3	F	53	04	22		CONN. CH. FEED	J04	0-PAM-X1			95	01	30B	REPRCD. PREAMP. CH X1 TO X8	P01
	3	F	54	04	22		CONN. CH. FEED	J04	0-PAM-X2			95	01	28B	REPRCD. PREAMP. CH X1 TO X8	P01
	3	F	55	04	22		CONN. CH. FEED	J04	0-PAM-X3			95	01	25C	REPRCC. PREAMP. CH X1 TO X8	P01
	3	F	56	04	22		CONN. CH. FEED	J04	0-PAM-X4			95	01	22B	REPRCD. PREAMP. CH X1 TO X8	PC1
	3	F	57	04	22		CONN. CH. FEED	J04	0-PAM-X5			95	01	10B	REPRCD. PREAMP. CH X1 TO X8	P01
	3	F	58	04	22		CONN. CH. FEED	J04	0-PAM-X6			95	01	08B	REPRCC. PREAMP. CH X1 TO X8	P01
	3	F	59	04	22		CONN. CH. FEED	J04	0-PAM-X7			95	01	05C	REPRCC. PREAMP. CH X1 TO X8	PC1
	3	F	60	04	22		CONN. CH. FEED	J04	0-PAM-X8			95	01	02B	REPRCD. PREAMP. CH X1 TO X8	P01
	3	F	61	04	22		CONN. CH. FEED	J04								
	3	F	62	04	22		CONN. CH. FEED	J04	0-PAM-C1	6	F	52	07	17	CCNN. REP. AMP. CH01-08	J07
	3	F	63	04	22		CONN. CH. FEED	J04		6	M	53	03	02	CCNN. HEAD SIGNALS	J03
	3	F	64	04	22		CONN. CH. FEED	J04	0-PAM-C2	6	F	52	07	18	CCNN. REP. AMP. CH01-08	J07
	3	F	69	03	22		CONN. CH. FEED	J03								./.
	3	F	69	04	22		CONN. LOWER CH. LEVEL	J04								
	3	F	70	03	22		CONN. CH. FEED	J03								
	3	F	70	04	22		CONN. LOWER CH. LEVEL	J04								
	3	F	71	03	22		CONN. CH. FEED	J03								
	3	F	71	04	22		CONN. LOWER CH. LEVEL	J04								
	3	F	93	01	04B		HF DRIVER CH. XY	P01								
			94	01	07A		MASTER OSCILLATOR	P01								

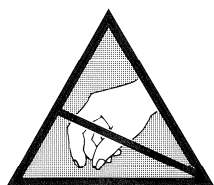
SIG.NAME	COLOR	TYPE	GR	EL	PT	S	DESCRIPTION OF ELEMENT	SIG.NAME	COLOR	TYPE	GR	EL	PT	S	DESCRIPTION OF ELEMENT
(CCNT.)	6	F	53	03	03		CONN. HEAD SIGNALS	J03	0-PAM-21	6	F	52	09	08	CCNN. REP. AMP. CH17-24
															CONN. HEAD SIGNALS
0-PAM-03	6	F	52	07	19		CONN. REP. AMP. CH01-08	J07							
	6	M	54	03	02		CONN. HEAD SIGNALS	J03	C-PAM-22	6	F	52	09	07	CCNN. REP. AMP. CH17-24
															CONN. HEAD SIGNALS
0-PAM-04	6	F	52	07	20		CCNN. REP. AMP. CH01-08	J07							
	6	F	54	03	03		CONN. HEAD SIGNALS	J03	0-PAM-23	6	F	52	09	06	CCNN. REP. AMP. CH17-24
															CONN. HEAD SIGNALS
0-PAM-05	6	F	52	07	08		CCNN. REP. AMP. CH01-08	J07							
	6	M	55	03	02		CONN. HEAD SIGNALS	J03	C-PAM-24	6	F	52	09	05	CCNN. REP. AMP. CH17-24
															CONN. HEAD SIGNALS
0-PAM-06	6	F	52	07	07		CCNN. REP. AMP. CH01-08	J07							
	6	F	55	03	03		CONN. HEAD SIGNALS	J03	C-PAM-25	6	F	52	10	17	CCNN. REP. AMP. CH25-32
0-PAM-07	6	F	52	07	06		CONN. REP. AMP. CH01-08	J07	0-PAM-26	6	F	52	10	18	CCNN. REP. AMP. CH25-32
	6	M	56	03	02		CONN. HEAD SIGNALS	J03							
									C-PAM-27	6	F	52	10	19	CCNN. REP. AMP. CH25-32
0-PAM-08	6	F	52	07	05		CCNN. REP. AMP. CH01-08	J07							
	6	F	56	03	03		CONN. HEAD SIGNALS	J03	0-PAM-28	6	F	52	10	20	CONN. REP. AMP. CH25-32
0-PAM-09	6	F	52	08	17		CCNN. REP. AMP. CH09-16	J08	0-PAM-29	6	F	52	10	08	CCNN. REP. AMP. CH25-32
	6	M	57	03	02		CONN. HEAD SIGNALS	J03							
									0-PAM-30	6	F	52	10	07	CCNN. REP. AMP. CH25-32
0-PAM-10	6	F	52	08	18		CCNN. REP. AMP. CH09-16	J08							
	6	F	57	03	03		CONN. HEAD SIGNALS	J03	0-PAM-31	6	F	52	10	06	CCNN. REP. AMP. CH25-32
0-PAM-11	6	F	52	08	19		CCNN. REP. AMP. CH09-16	J08	0-PAM-32	6	F	52	10	05	CONN. REP. AMP. CH25-32
	6	M	58	03	02		CONN. HEAD SIGNALS	J03							
0-PAM-12	6	F	52	08	20		CONN. REP. AMP. CH09-16	J08							
	6	F	58	03	03		CONN. HEAD SIGNALS	J03							
0-PAM-13	6	F	52	08	08		CONN. REP. AMP. CH09-16	J08							
	6	M	59	03	02		CONN. HEAD SIGNALS	J03							
0-PAM-14	6	F	52	08	07		CONN. REP. AMP. CH09-16	J08							
	6	F	59	03	03		CONN. HEAD SIGNALS	J03							
0-PAM-15	6	F	52	08	06		CONN. REP. AMP. CH09-16	J08							
	6	M	60	03	02		CONN. HEAD SIGNALS	J03							
0-PAM-16	6	F	52	08	05		CONN. REP. AMP. CH09-16	J08							
	6	F	60	03	03		CONN. HEAD SIGNALS	J03							
0-PAM-17	6	F	52	09	17		CONN. REP. AMP. CH17-24	J09							
	6	M	61	03	02		CONN. HEAD SIGNALS	J03							
0-PAM-18	6	F	52	09	18		CONN. REP. AMP. CH17-24	J09							
	6	F	61	03	03		CONN. HEAD SIGNALS	J03							
0-PAM-19	6	F	52	09	19		CONN. REP. AMP. CH17-24	J09							
	6	M	62	03	02		CONN. HEAD SIGNALS	J03							
0-PAM-20	6	F	52	09	20		CONN. REP. AMP. CH17-24	J09							
	6	F	62	03	03		CONN. HEAD SIGNALS	J03							

GROUP NUMBERS A800 / AUDIO SECTION

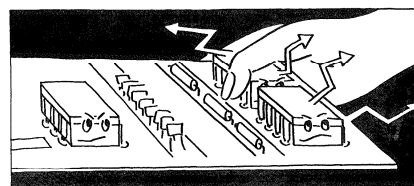


CONTENTS / EXPANSION UNIT 1.180.520

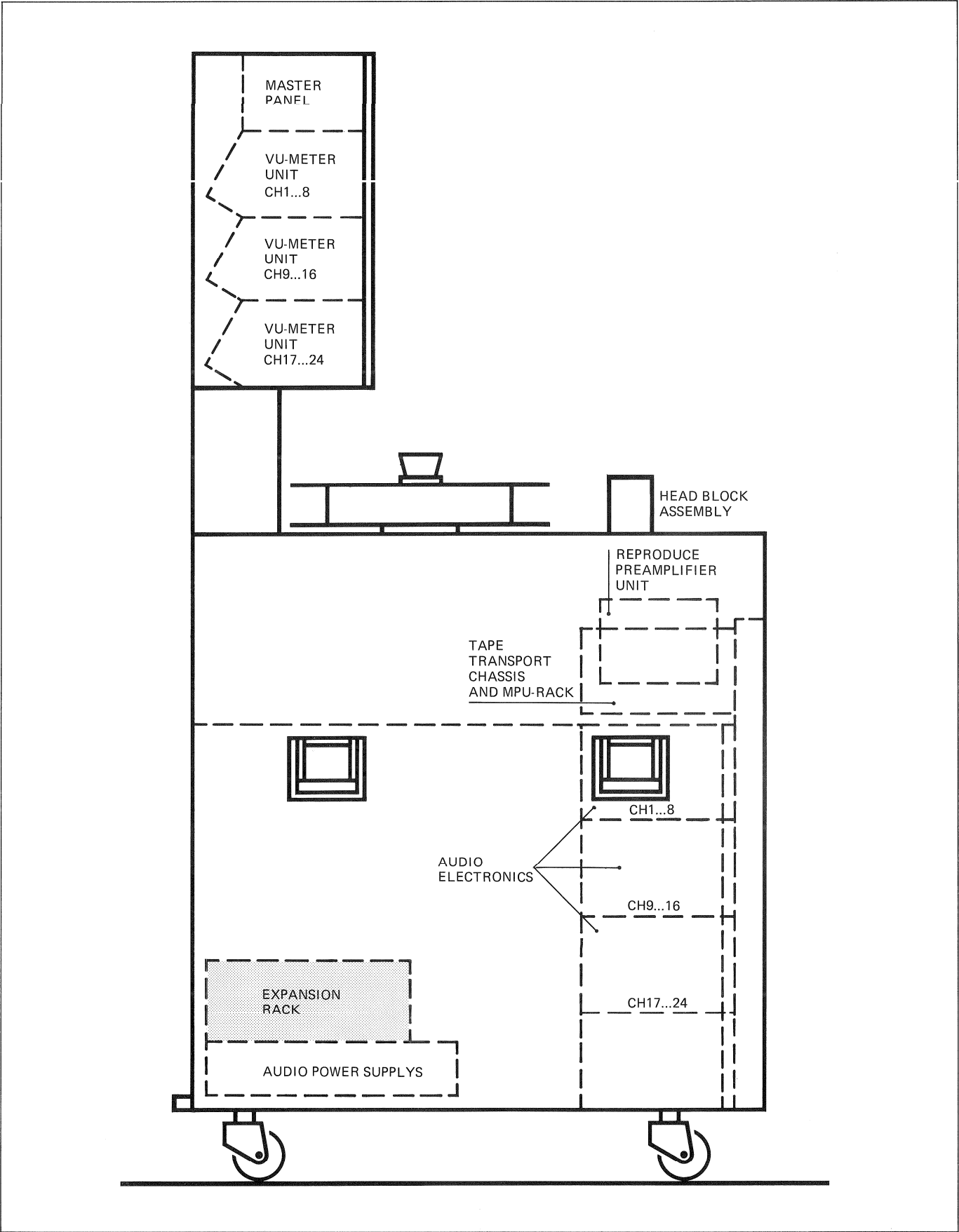
GR/EL	DESCRIPTION	SCHEMATIC NO.	SECTION/PAGE
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	– ASSEMBLY 17–34	1.228.577–00	
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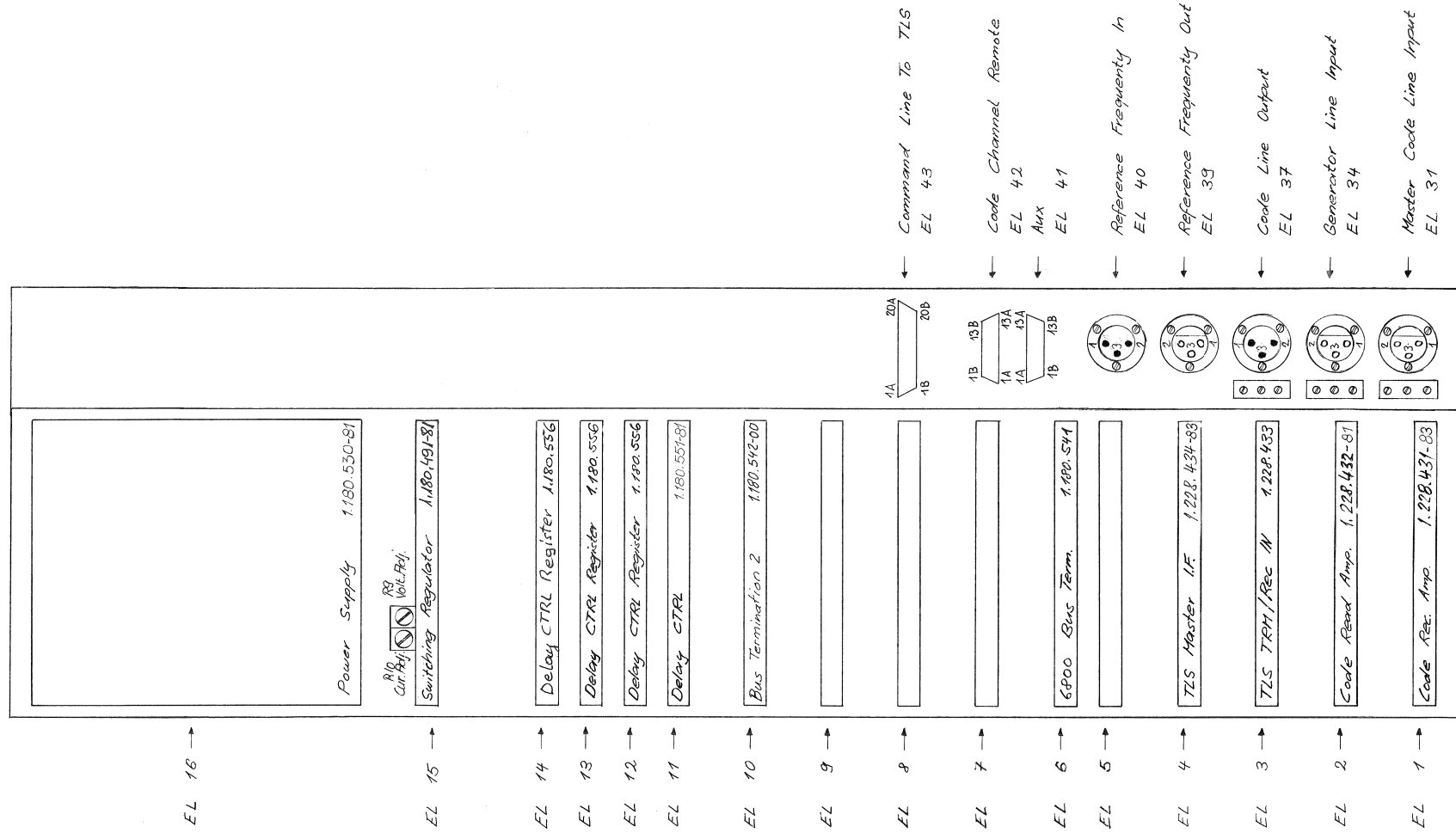
ALL PCBs MARKED WITH THIS SIGN ▲
CONTAIN COMPONENTS SENSITIVE TO
STATIC CHARGES.
PLEASE, REFER TO PREFACE BEFORE
YOU REMOVE THESE BOARDS.



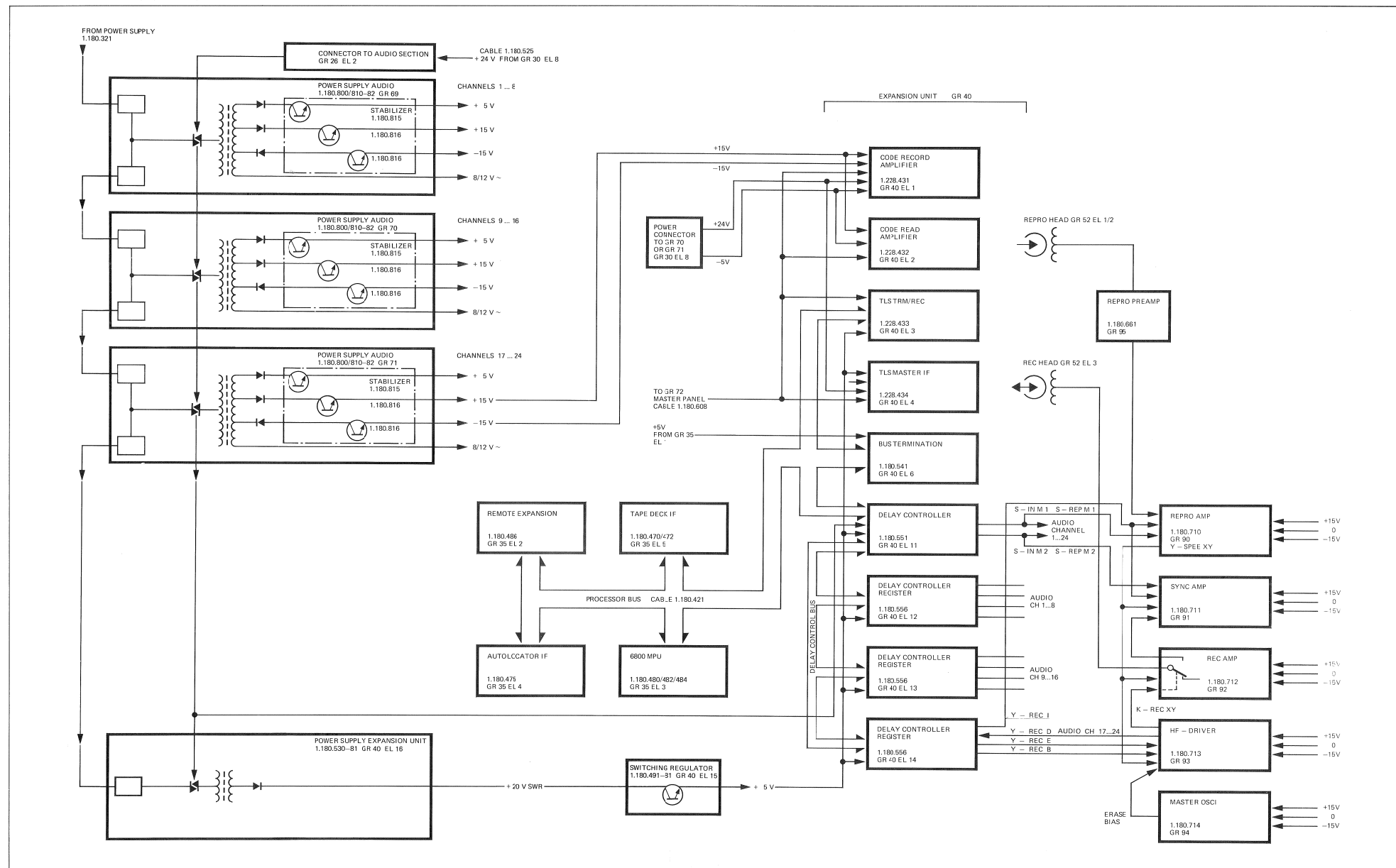
LOCATION OF EXPANSION RACK



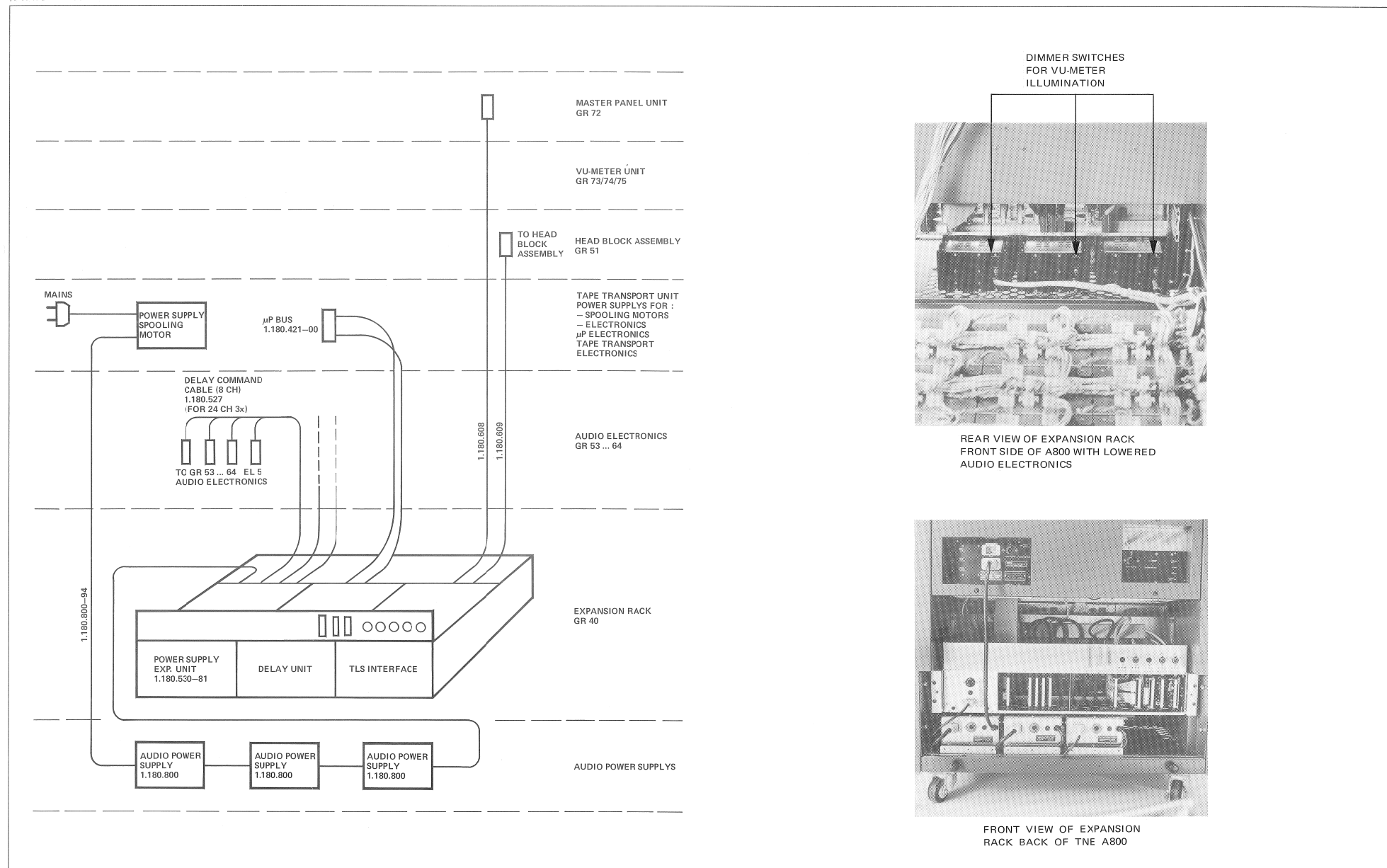
EXPANSION RACK 1.180.081 GR40



SUPPLY AND SIGNAL PATHS OF EXPANSION UNIT



WIRING OF EXPANSION RACK



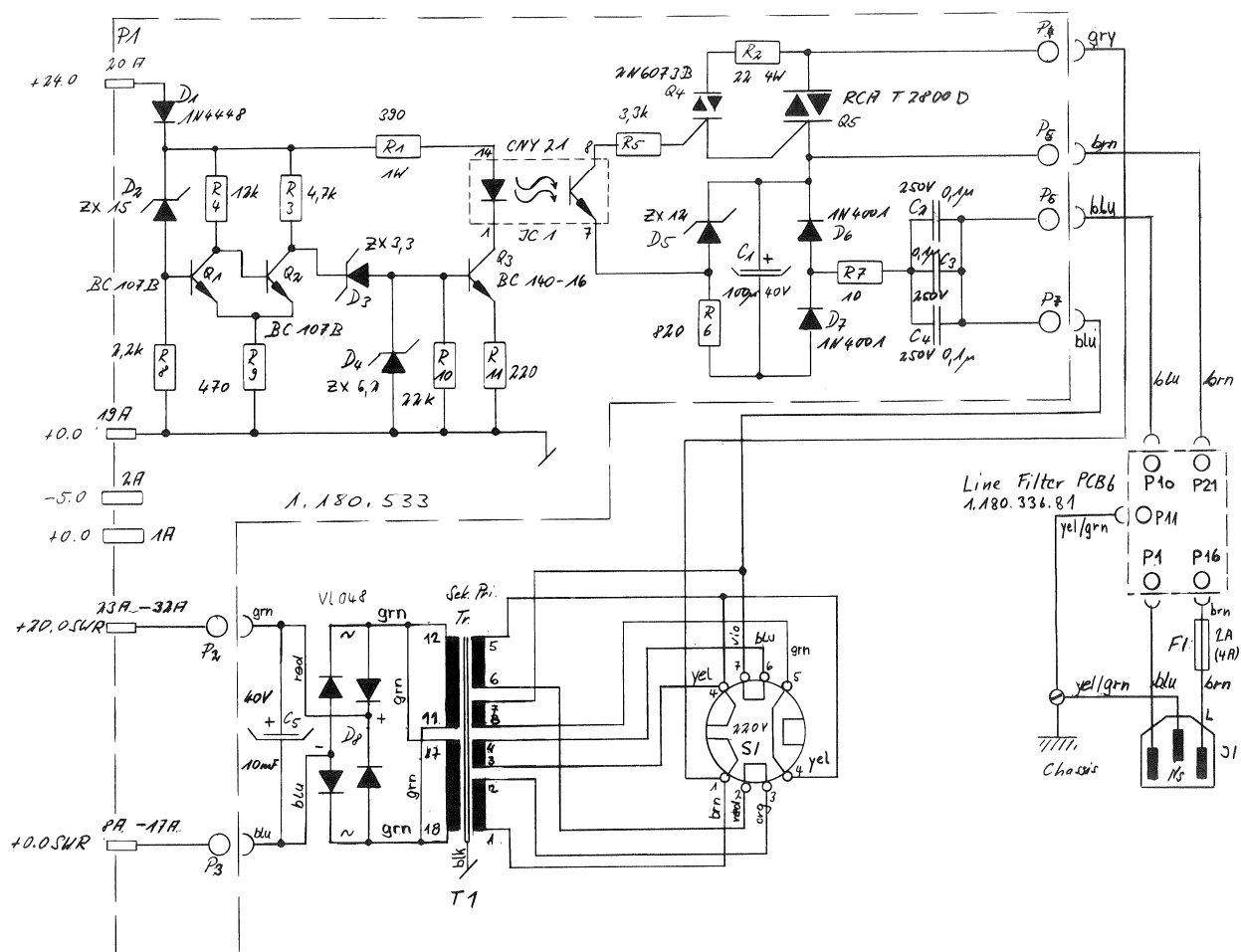
IND	POS NO	PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MFR
C	01	59.25.5101	100 U	40V	EL
C	02	59.99.0453	0,1 U	250V	MP
C	03	59.99.0453	0,1 U	250V	MP
C	04	59.99.0453	0,1 U	250V	MP
D	01	50.04.0125	1N4448		
D	02	50.04.1119	15 V	Z	
D	03	50.04.1107	3,3V	Z	
D	04	50.04.1118	6,2V	Z	
D	05	50.04.1117	12V	Z	
D	06	50.04.0122	1N4001		
D	07	50.04.0122	1N4001		
IC	1	50.99.0120	CMY 21	Optically coupled isol.525CMY21	T,E
P	01	54.01.0371	1x16Pole		
P	02	54.02.0320	2,5x2,8x0,8 plug		
P	03	54.02.0320	"		
P	04	54.02.0320	"		
P	05	54.02.0320	"		
P	06	54.02.0320	"		
P	07	54.02.0320	"		
Q	01	50.03.0408	BC107B	NPN	
Q	02	50.03.0408	BC107B	NPN	
Q	03	50.03.0316	BC140-15	NPN	Si
Q	04	50.99.0119	286073B		M
Q	05	50.99.0106	T 2800	400V 8 A Triac SC 146 D	RCA

IND	DATE	NAME			
③					
③					
③					
③					
③	3.1.78	Kurs/gv			
STUDER	Power Supply PC Card	1.180.533	PAGE 1 OF 2		

IND	POS NO	PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MFR
A	01	1.180.533		Power Supply PC Card	
C	05	59.26.61C3	10 M	10K 40V EL	
D	08	70.01.0225	VL 048	35V 12A	M
F	01	51.01.0120	2 AT	5 x 20	
FL	1	89.01.0380	B84102-C5	Line-Filter 2x4A	Si
J	01	54.04.0104		Plug	
S	01	53.03.0123	100-240V	Voltage selector	
T	01	1.180.531		Mains Transformer	St
XP	1	53.03.0104	5 x 20	Fuss holder	

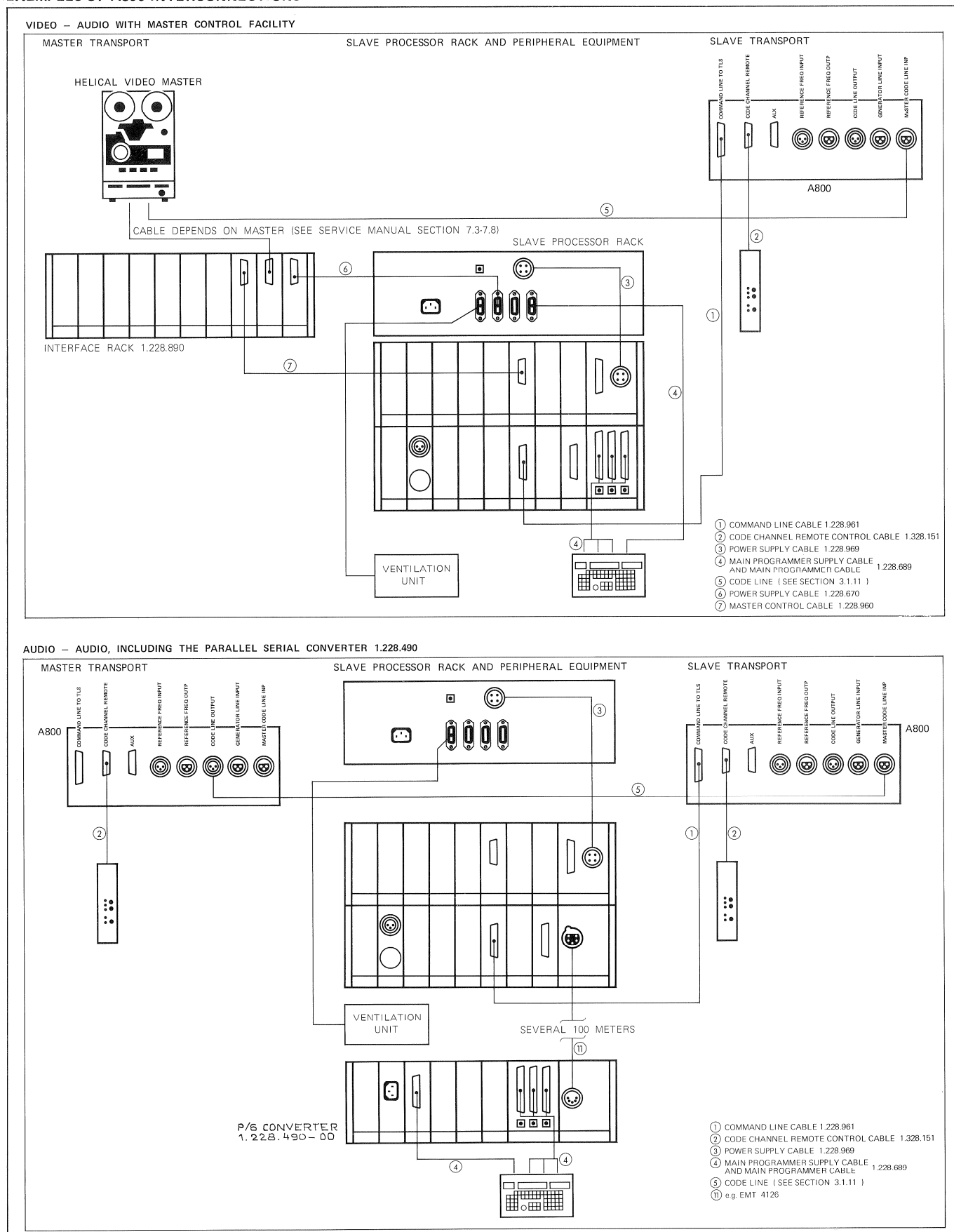
IND	DATE	NAME			
③					
③					
③					
③					
③	14.5.79	Keller/gv			
STUDER	Power Supply Exp. Unit	1.180.530	PAGE 1 OF 1		

POWER SUPPLY UNIT 1.180.530-81 GR40 EL16

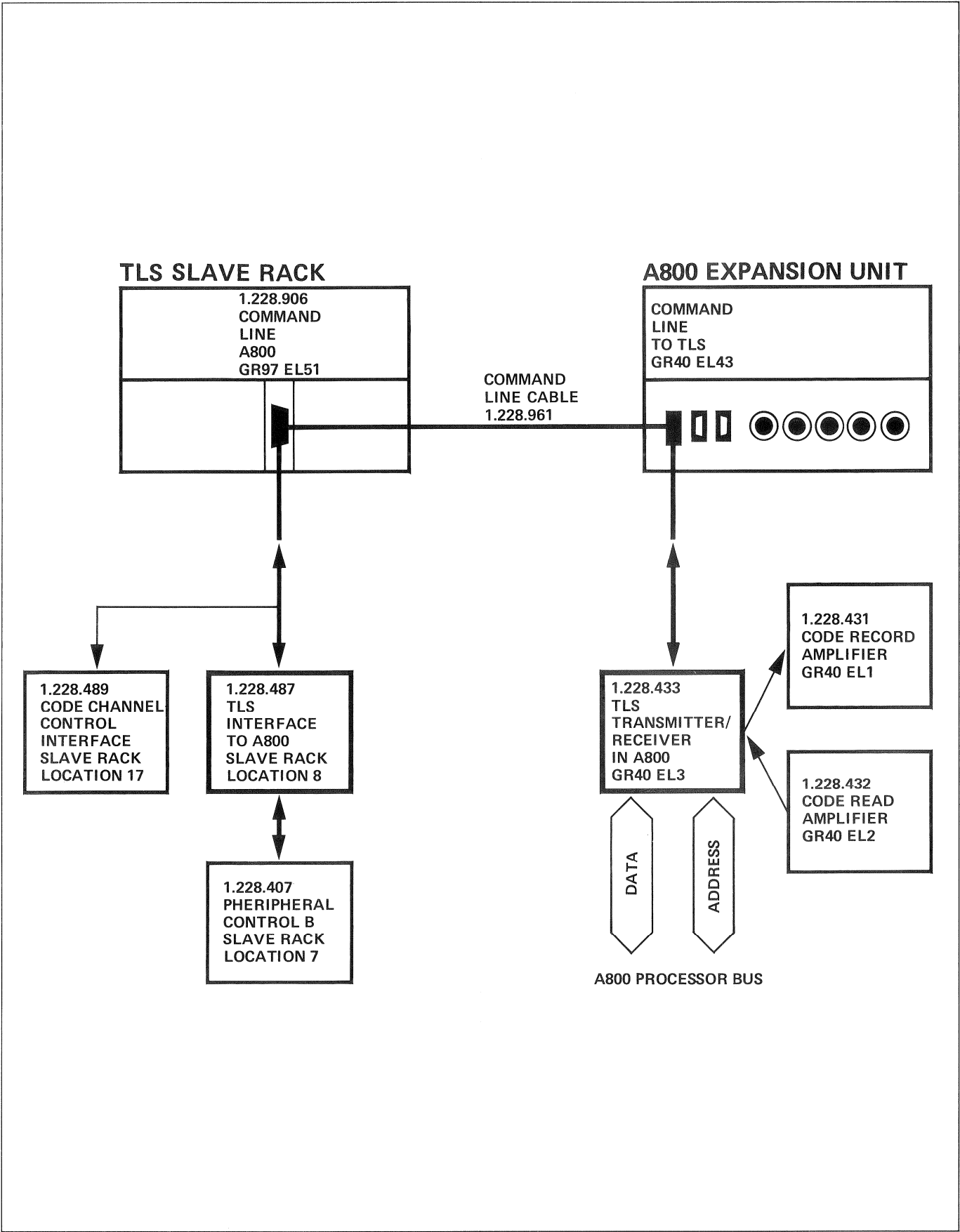


- | | | |
|----------|----------------------|-----|
| Y-REHEAR | <input type="text"/> | 3A |
| SPOTERAS | <input type="text"/> | 4A |
| DIDELINH | <input type="text"/> | 5A |
| CRAZCAN | <input type="text"/> | 6A |
| S-INM 1 | <input type="text"/> | 7A |
| S-INM 2 | <input type="text"/> | 18A |
| S-REPM1 | <input type="text"/> | 21A |
| S-REPM2 | <input type="text"/> | 22A |

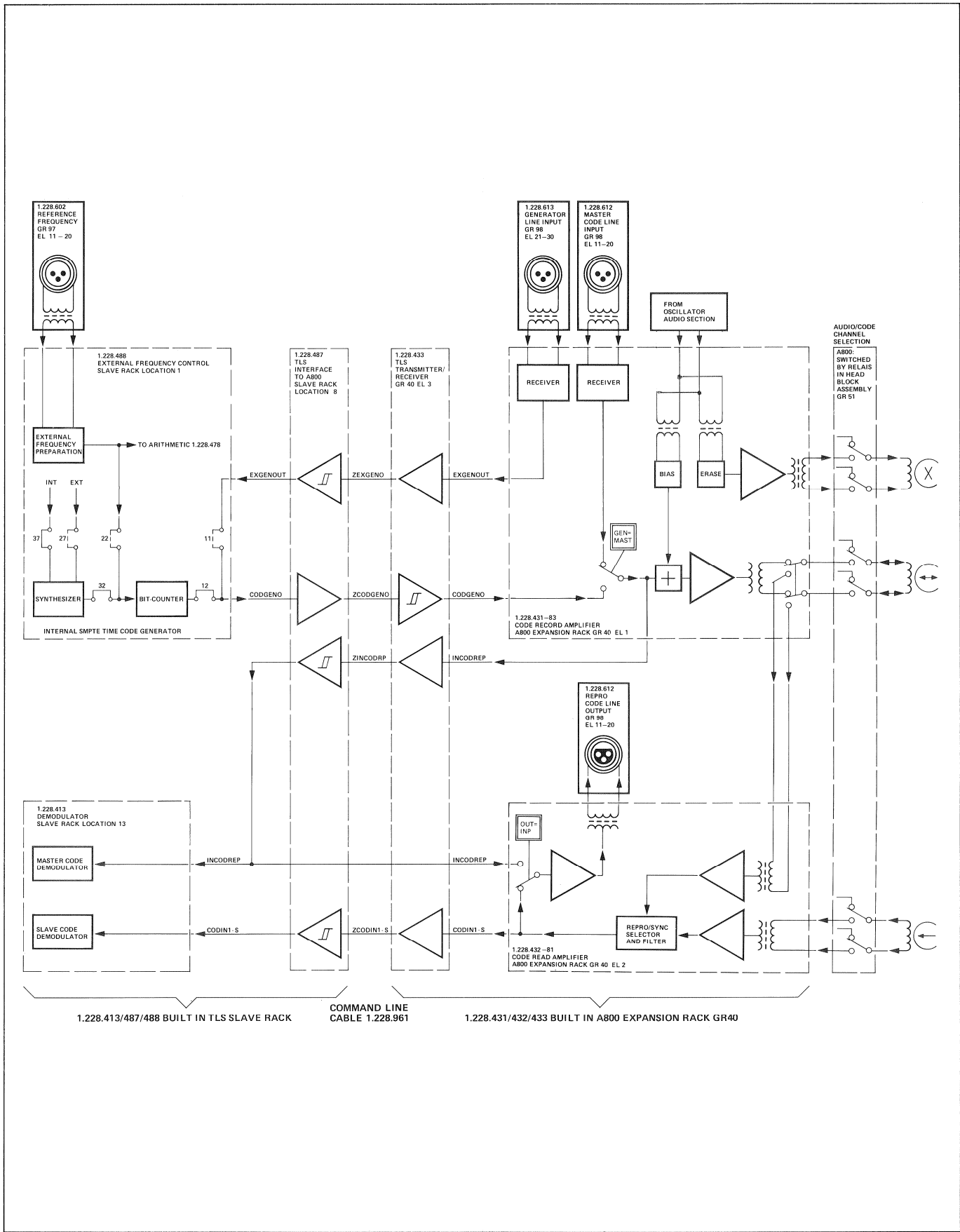
EXAMPLES OF A800 INTERCONNECTIONS



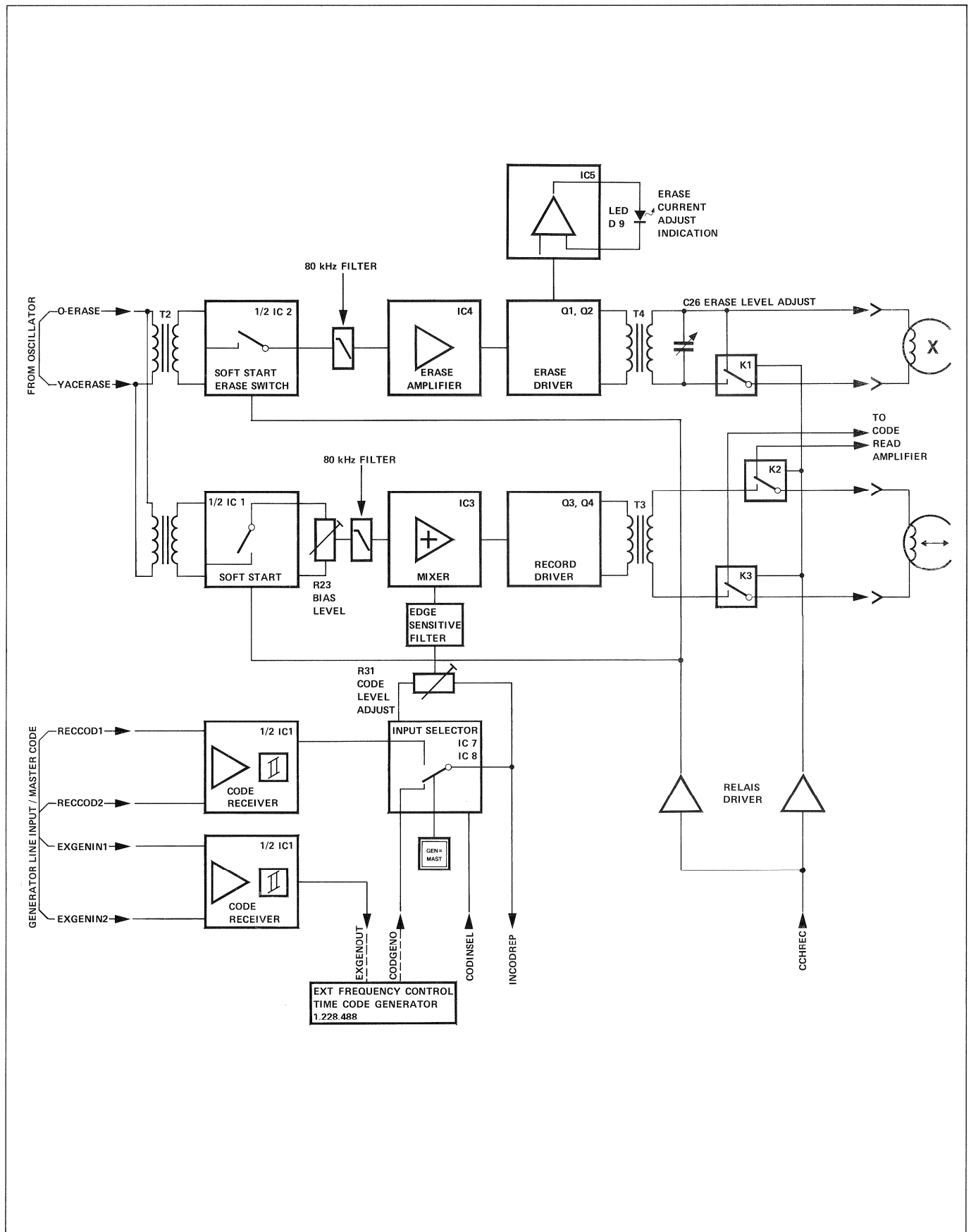
EXAMPLES OF A800 INTERCONNECTIONS



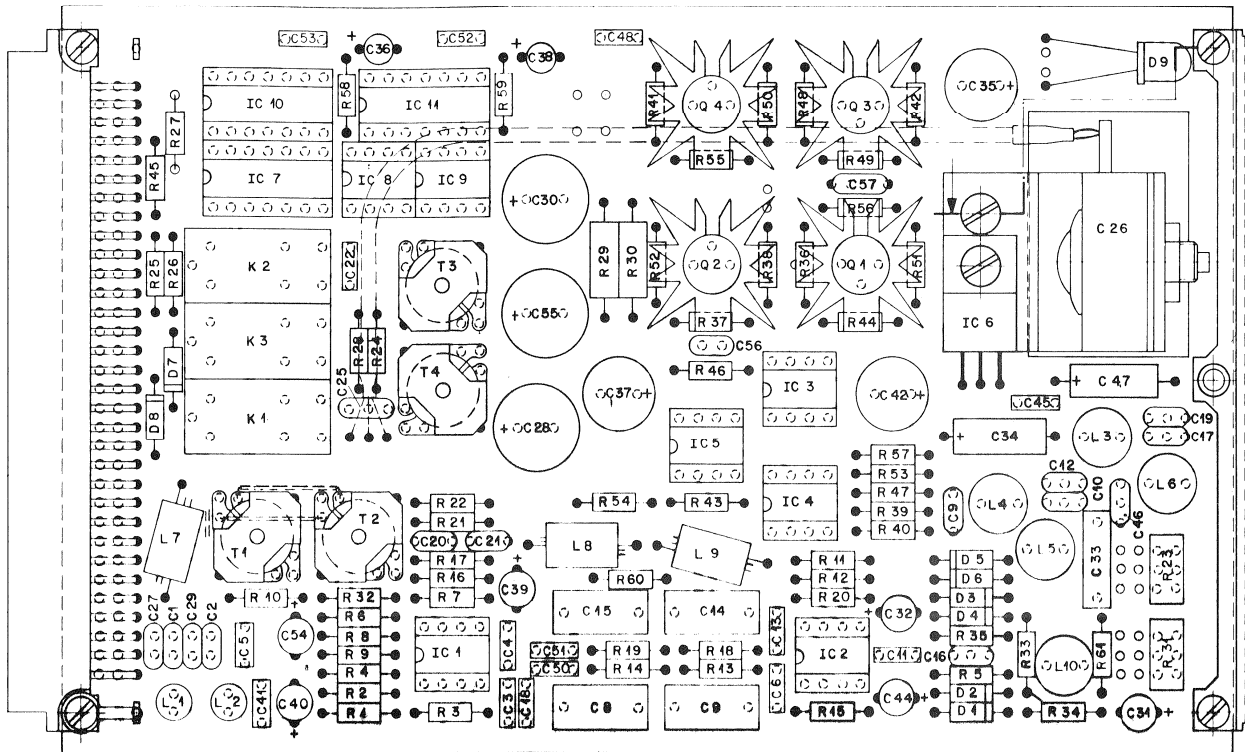
INTERCONNECTION A800 EXPANSION RACK / TLS2000 SLAVE RACK



CODE RECORD AMPLIFIER PCB A800 MASTER 1.228.431-83/82 GR40 EL1



CODE RECORD AMPLIFIER PCB A800 MASTER 1.228.431-83/82 GR40 EL1



1.228.431 CODE AUFNAHMEVERSTÄRKER

Die Codequelle kann mittels Jumper gewählt werden:

- Interner Generator
- Externer Generator
- Master Code

Der Pegel des Code kann mit R31 eingestellt werden. In IC3 wird der Code mit dem Bias Signal (80 kHz) gemischt. Der Bias wird weich eingeschaltet wenn das Signal YRECECCH logisch 0 ist; dasselbe geschieht mit dem Löschkreis. Beide Signale, Löschi- und Biasignal sowie die NF werden in einer Gegentakt-Stufe verstärkt und den entsprechenden Köpfen zugeführt. Mit C26 kann der Löschstrom eingestellt werden: Die LED auf dem Print hört auf zu glimmen wenn der Löschstrom das Minimum erreicht hat. Die Köpfe werden mittels Relais abgeschaltet wenn die Aufnahmefunktion inaktiv ist.

Wichtige Signale

aktiviert die Aufnahme
AC-Signal 80kHz (240kHz / Ind.-82)
AC-Signal 80kHz
zeigt den Code, wenn der interne Generator läuft
logisch 0, wenn der interne Generator Master ist
Signal von einem externen Codegenerator
Code von der Mastermaschine
zeigt den Code, wenn er vom Sync-Kanal gelesen wird
zeigt den Code vom Master oder vom internen Generator

Y-REC-CCH
Y-AC-BIAS
Y-AC-ERASE
CODGENO
CODINSEL
EXGENIN
RECCOD
SYNCH 1
INCODREP

1.228.431 CODE RECORD AMPLIFIER

Code input is selectable:

- int. generator
- ext. generator
- Master code

The code level is adjustable with R31 and in IC3 is mixed together with 80 kHz Bias frequency. Bias is softly switched on when YRECECCH is low; the same happens with the erase circuit. Both signals erase and Bias + NF signal are amplified in a push/pull stage and fed to their heads. With C26 the erase current is adjustable and the Led on the printed board stops glowing when the current is minimized. The heads are switched off by relays when recording is deactivated.

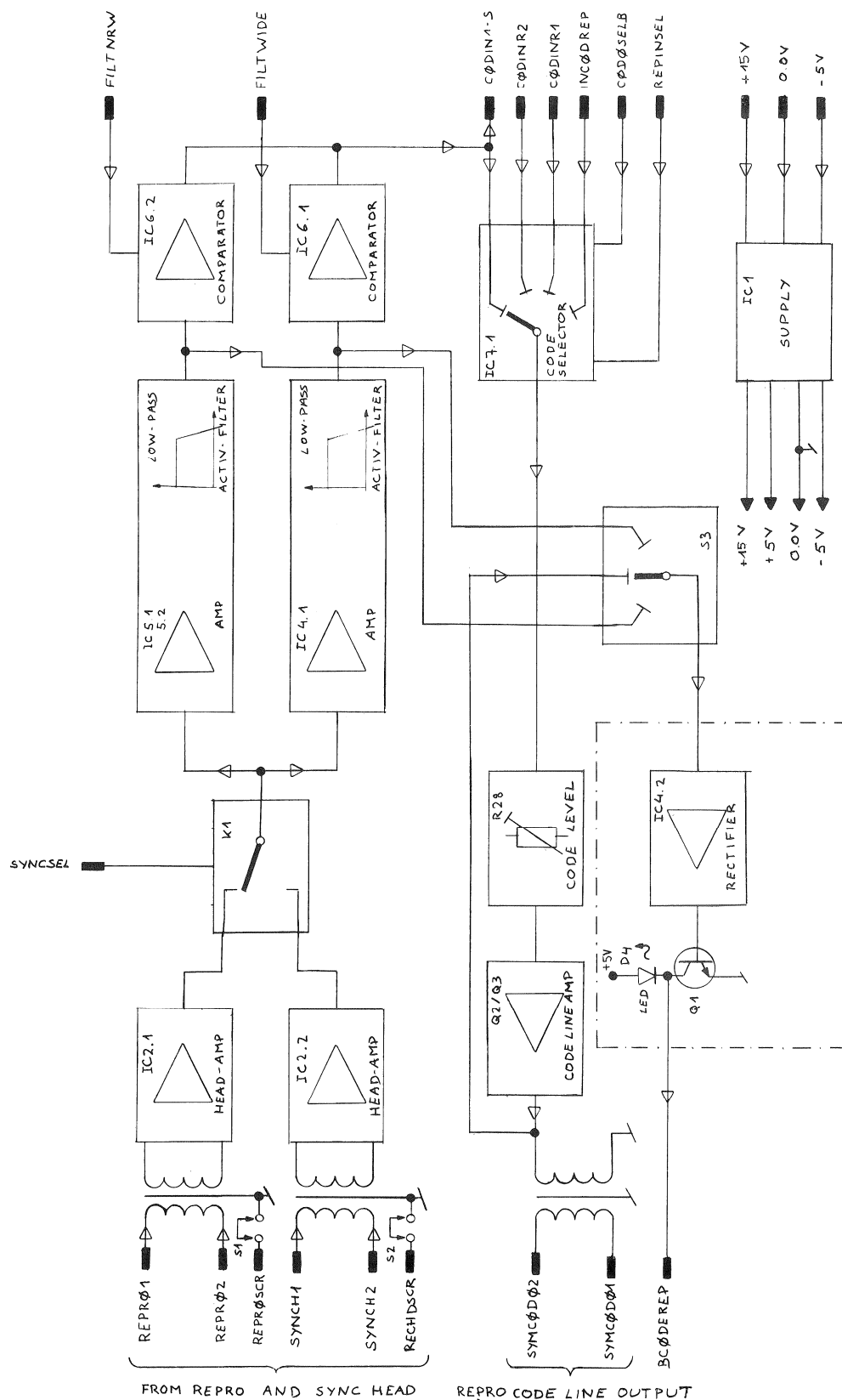
Important signals

activates Recording
AC-Signal 80kHz (240kHz / Ind.-82)
AC-Signal 80kHz
Shows code when int. Gen. is running
Low when int. Gen. = Master
Signal from external Generator
Code from master machine
Shows code when read from synch-channel
Shows code from Master or int. Gen.

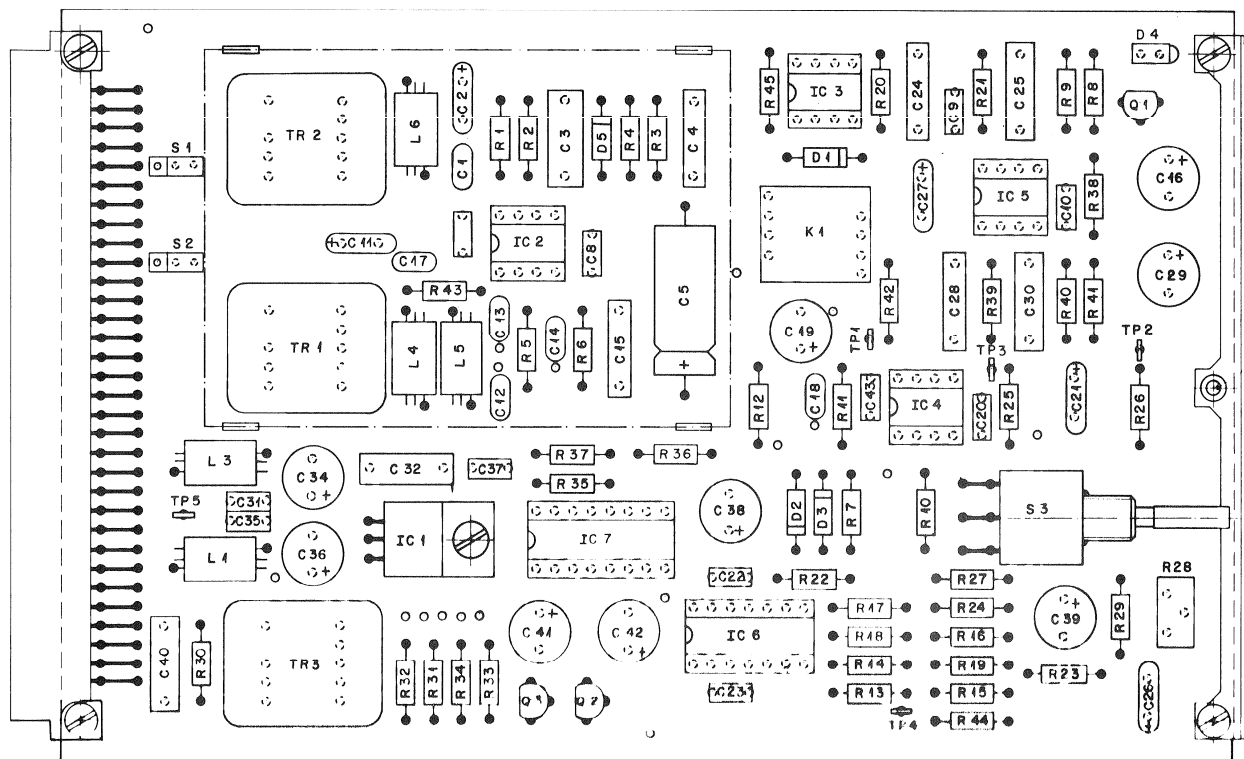
CIRCUIT 1.228.431–83
LAYOUT 1.228.711–12

[illegible]04.82

CODE READ AMPLIFIER PCB 1.228.432-81 GR40 EL2



CODE READ AMPLIFIER PCB 1.228.432-81 GR40 EL2



1.228.432 CODE LESE VERSTÄRKER

Die Signale vom Wiedergabe- und vom Aufnahme-
kopff werden symmetrisch den Kopfver-
stärkern zugeführt (IC2).

Die Umschaltung von Wiedergabe auf Sync geschieht mittels
eines Relais. TP1 zeigt das verstärkte Signal
vor der Filterstufe. In der Position Filter wide
beträgt die Bandbreite 200 kHz. Damit ist es
möglich, auch während dem Umspulen Code zu
lesen. Die Betriebsart Filter narrow ist haupt-
sächlich für die Wiedergabe vorgesehen und sorgt
für eine gute Geräuschunterdrückung.

Der Ausgang Repro Code Line Out ist umschalt-
bar, der Pegel ist einstellbar mit R28. Signal auf
dem Codekanal wird angezeigt durch die Level-
LED. Ein Dreistufenschalter ermöglicht die An-
zeige der folgenden 3 Betriebsarten:

- a) Code am Ausgang
- b) Code nach dem schmalen Filter
- c) Code nach dem breiten Filter

Der Ausgang wird mit IC7 gewählt. Dieser
Schaltkreis definiert, welcher Code am Ausgang
Repro Code Line Out anliegt, d.h. das TLS kann
zum Beispiel mit dem Code vom Sync-Verstär-
ker arbeiten, während am Ausgang Repro Code
Line Out das Codesignal vom Wiedergabekopf
anliegt.

Wichtige Signale

Code Signal ab Wiedergabekopf	(AC)
Code Signal ab Synckopf	(AC)
Repro Code Line Out Signal	(AC)
Signal Codespur bespielt ja/nein	(DC)
Code ab Wiedergabekanal	(DC)
Code ab Synckopf	(DC)
Filterwähler	(DC)
Ausgang vom Code Leseverstärker zum TLS	
Mastercode oder interner Generator Code von 1.228.431	
Schaltsignale:	
Bsp. REPINSEL = Low, CODOSELB = High	
Code Signal CODIN 1 - S erscheint am Ausgang Y	

1.228.432 CODE READ AMPLIFIER

The signals from Repro and synch head are sym-
metrically fed into the head-preamplifiers
(IC2).

Repro or synch selection is done by
a relay. TP1 shows the amplified signal be-
fore the filter stage. In Filter wide position the
frequency response goes up to 200 kHz. This
makes it possible to read code in wind-mode.
Filter narrow position is mainly for play opera-
tion and enables a good noise suppression. The
output at "repro code line out" can be selected,
the level is adjustable with R28. Code is indi-
cated by a red LED. A three-position switch en-
ables indication of the following status:

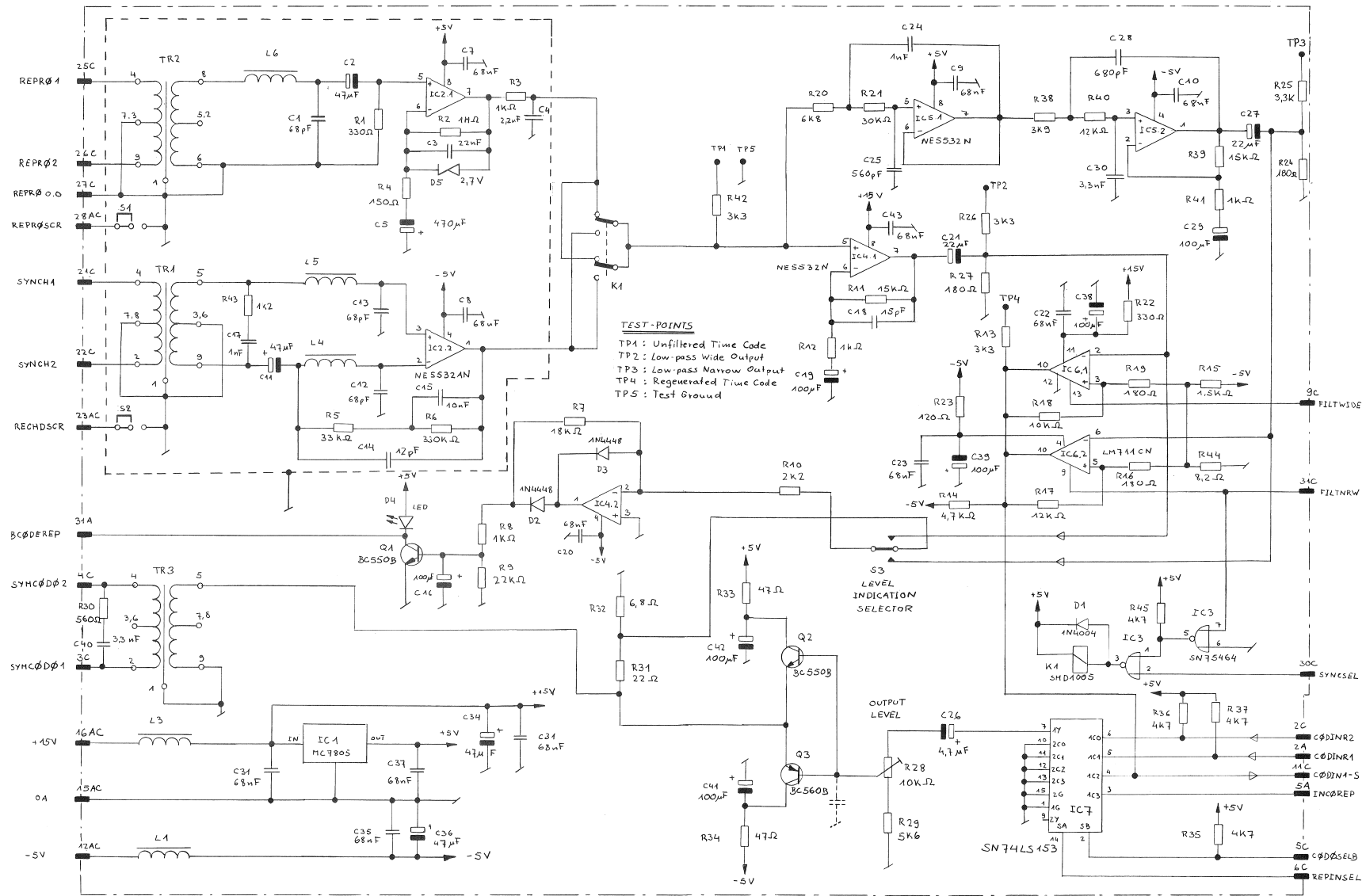
- a) Code at output normal position
- b) Code at pos. filter narrow
- c) Code at pos. filter wide

The output is selected by IC7. This circuit de-
fines what kind of code "repro code line out"
indicates. This means e.g. that the TLS can work
with the code from the synch-amplifier and at
the same time "code line out" reads from the
repro-head.

Important signals

Code signal from repro head	(AC)
Code signal from synch head	(AC)
Repro code line out	(AC)
Signal for LED Code yes/no	(DC)
Select code repro channel	(DC)
Select code synch channel	(DC)
Filterselector	(DC)
Output form code read amplifier to TLS	
Mastercode or int. Gen. from 1.228.431	
Selectorsignals:	
e.g. REPINSEL = Low, CODOSELB = High	
then: Code Signal CODIN 1 - S appears at output Y	

CODE READ AMPLIFIER PCB 1.228432-81 GR40 EL2



CODE READ AMPLIFIER PCB 1.228.432-81 GR40 EL2

IND.	PCS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.	IND.	PCS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
C****1	59*26*4680	68pF	63V 5% KER			R****41	57*11*4102	1 kOhm	5% 0*25W		
C****2	59*26*0470	47nF	6*3V 20% SAL			R****42	57*11*4102	3*3 kOhm	5% 0*25W		
C****3	59*02*5223	22nF	250V 5% MPC			R****43	57*11*4122	1*2 kOhm	5% 0*25W		
C****4	59*11*6022	2*0nF	4000V 5% PC			R****44	57*11*4020	8*2 Ohm	2% 0*25W		
C****5	59*25*1471	470uF	6*3V -10% +10% E1			R****45	57*11*4472	4*7 kOhm	5% 0*25W		
C****6			not used								
C****7	59*49*0205	68nF	100V -20% +10% KER			S****1	54*01*0021	6547n-001	Jumper	PH	
C****8	59*49*0205	68nF	100V -20% +10% KER			S****2	54*01*0021	6547n-001	Jumper	PH	
C****9	59*49*0205	68nF	100V -20% +10% KER			S****3	59*01*0154	7215AP08	single Pole 3-Position Switch	CEK	
C****10	59*49*0205	68nF	100V -20% +10% KER								
C****11	59*26*0470	47nF	6*3V 20% SAL			TR****1	1*022*410*00		Input Transformer 116	SE	
C****12	59*34*4680	68pF	63V 5% KER			TR****2	1*022*410*00		Input Transformer 111*3	SE	
C****13	59*34*4680	68pF	63V 5% KER			TR****3	1*022*408*00		Code Output Transformer 111	SE	
C****14	59*34*1220	122nF	63V 5% KER								
C****15	59*11*3103	10nF	160V 5% PC								
C****16	59*22*5101	100uF	25V -10% +50% E1								
C****17	59*32*4102	1nF	50V 20% KER								
C****18	59*34*1150	15nF	63V 5% KER								
C****19	59*22*5101	100uF	25V -10% +50% E1								
C****20	59*49*0205	68nF	100V -20% +10% KER								
C****21	59*26*1220	22nF	LOW 20% SAL								
C****22	59*49*0205	68nF	100V -20% +10% KER								
C****23	59*49*0205	68nF	100V -20% +10% KER								
C****24	59*11*6102	1nF	400V 5% PC								
C****25	59*11*4561	560pF	400V 5% PC								
C****26	59*26*1470	47uF	LOW 20% SAL								
C****27	59*26*1220	22uF	LOW 20% SAL								
C****28	59*11*4680	680pF	400V 5% PC								
C****29	59*22*5101	100uF	25V -10% +50% E1								
C****30	59*11*6332	3*0nF	400V 5% PC								
C****31	59*49*0205	68nF	100V -20% +10% KER								
C****32	59*31*0334	330nF	63V 20% MPE								
C****33			not used								
C****34	59*22*5470	47uF	25V -10% +50% E1								
C****35	59*49*0205	68nF	100V -20% +10% KER								
C****36	59*22*5470	47uF	25V -10% +50% E1								
C****37	59*49*0205	68nF	100V -20% +10% KER								

Ta = Tantal, PC = Polycarb, PPC = metallized Polycarb, KER = Ceramic
E1 = Electrolytic, SAL = Solid Aluminum, MPE = metallized Polyester
Manufacturer: Di:italco, Mot:Motorola, NS:National Semiconductors
Sig:Signetics, Ex:Exar, TI:Texas Instrument
Rch:Radco, Phn:Philips, Svc:Siemens, Stc:Studer

S T U D E R 81/06/05 BR CODE READ AMPLIFIER AR00 1.228*432*81 PAGE 4

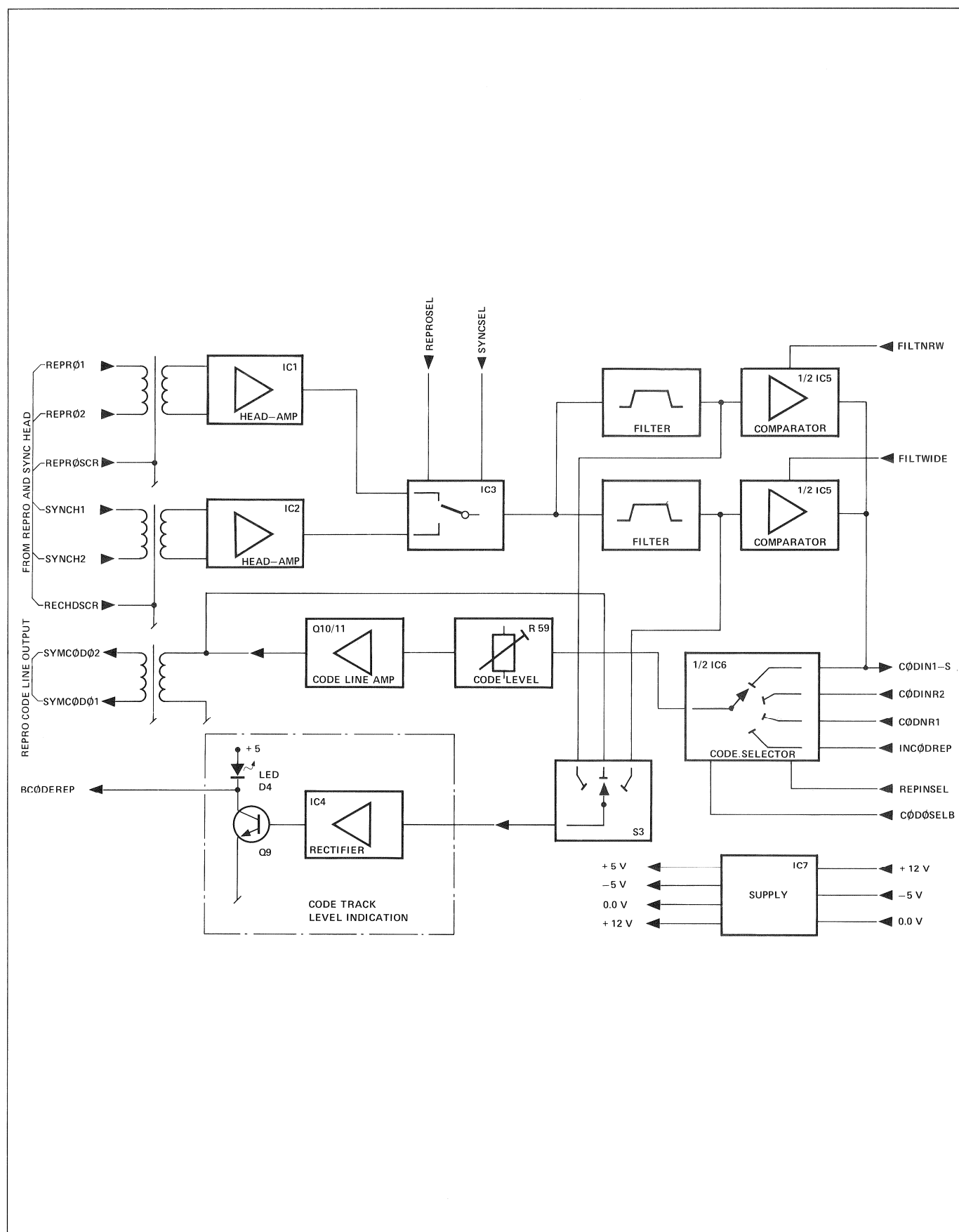
IND.	PCS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
C****38	59*22*5101	100uF	25V -10% +50% E1		
C****39	59*22*5101	100uF	25V -10% +50% E1		
C****40	59*11*6332	3*0nF	400V 5% PC		
C****41	59*22*5101	100uF	25V -10% +50% E1		
C****42	59*22*5101	100uF	25V -10% +50% E1		
C****43	59*49*0205	68nF	100V -20% +10% KER		
D****1	50*04*0105	1N6004	400V 1*1V 0.1A		
D****2	50*04*0105	1N6440	75V 1V 8 100MA		
D****3	50*04*0125	1N4440	75V 1V 8 100MA		
D****4	50*04*2107	951-2007	LED red 5V 5mA		
D****5	50*04*1106		Zener Diode 2*7V 5% 0*4W		
I****1	50*05*0021	MC 7805	LM 360T Voltage Regulator 5V	Mot+HS	
I****2	50*09*0106	NE 5532AN	NE 5532AN Dual OP Amp Low Noise	Sig+Ex	
I****3	50*05*0204	SN 75464	DS 6314N Dual NDR Driver 0*4C	TI +HS	
I****4	50*09*0105	NE 5532N	NE 5532N Dual OP Amp	Sig+Ex	
I****5	50*09*0105	NE 5532N	NE 5532N Dual OP Amp	Sig+Ex	
I****6	50*05*0102	7110C	LM 7110C Dual Comparator	PC +HS	
I****7	50*06*0153	SN 74LS153	Dual 4 to 1 DataSelector	TI +Sig	
K****1	56*04*0170	SM D1005	Contactor 5V 20u	ITT	
L****1	62*01*0115		Choke Coil wideband	PH	
L****2			not used		
L****3	62*01*0115		Choke Coil wideband	PH	
L****4	62*01*0115		Choke Coil wideband	PH	
L****5	62*01*0115		Choke Coil wideband	PH	
L****6	62*01*0115		Choke Coil wideband	PH	
O****1	1*010*247*50	BC150B	BC109C NPN	ITT+Sig+Mot	
O****2	1*010*247*50	BC150B	BC109C NPN	ITT+Sig+Mot	
O****3	1*010*246*50	BC150B	BC179B PNP	ITT+Sig+Mot	
R****1	57*11*4334	33k kOhm	5% 0*25W		
R****2	57*11*4105	1 kOhm	5% 0*25W		
R****3	57*11*4102	1 kOhm	5% 0*25W		

S T U D E R 81/06/05 BR CODE READ AMPLIFIER AR00 1.228*432*81 PAGE 2

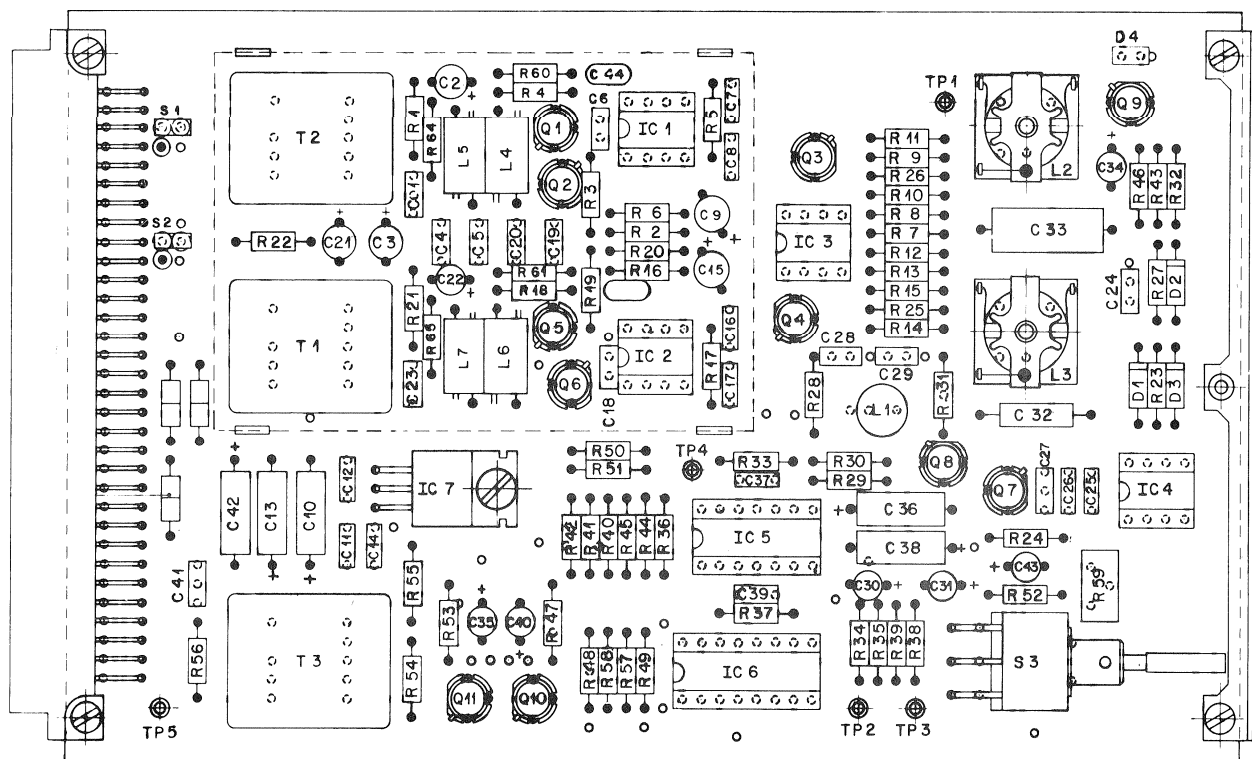
IND.	PCS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
R****4	57*11*4151	150 Ohm	5% 0*25W		
R****5	57*11*4333	33 kOhm	5% 0*25W		
R****6	57*11*4334	330 kOhm	5% 0*25W		
R****7	57*11*4103	10 kOhm	5% 0*25W		
R****8	57*11*4102	1 kOhm	5% 0*25W		
R****9	57*11*4223	22 kOhm	5% 0*25W		
R****10	57*11*4222	2*2 kOhm	5% 0*25W		
R****11	57*11*4153	15 kOhm	5% 0*25W		
R****12	57*11*4102	1 kOhm	5% 0*25W		
R****13	57*11*4332	3*3 kOhm	5% 0*25W		
R****14	57*11*4472	4*7 kOhm	5% 0*25W		
R****15	57*11*4152	1*5 kOhm	2% 0*25W		
R****16	57*11*4101	180 Ohm	2% 0*25W		
R****17	57*11*4123	12 kOhm	2% 0*25W		
R****18	57*11*4103	10 kOhm	2% 0*25W		
R****19	57*11*4181	180 Ohm	2% 0*25W		
R****20	57*11*4482	4*4 kOhm	5% 0*25W		
R****21	57*11*3303	30 kOhm	5% 0*25W		
R****22	57*11*4331	330 Ohm	5% 0*25W		
R****23	57*11*4121	120 Ohm	5% 0*25W		
R****24	57*11*4101	180 Ohm	5% 0*25W		
R****25	57*11*4332	3*3 kOhm	5% 0*25W		
R****26	57*11*4332	3*3 kOhm	5% 0*25W		
R****27	57*11*4181	180 Ohm	5% 0*25W		
R****28	58*01*1103	10 kOhm	Potentiometer		
R****29	57*11*4562	5*6 kOhm	5% 0*25W		
R****30	57*11*4561	560 Ohm	5% 0*25W		
R****31	57*11*4220	22 Ohm	5% 0*25W		
R****32	57*11*4689	6*8 Ohm	5% 0*25W		
R****33	57*11*4470	47 Ohm	5% 0*25W		
R****34	57*11*4470	47 Ohm	5% 0*25W		
R****35	57*11*4472	4*4 kOhm	5% 0*25W		
R****36	57*11*4472	4*4 kOhm	5% 0*25W		
R****37	57*11*4472	4*4 kOhm	5% 0*25W		
R****38	57*11*4392	3*4 kOhm	5% 0*25W		
R****39	57*11*4153	15 kOhm	5% 0*25W		
R****40	57*11*4123	12 kOhm	5% 0*25W		

S T U D E R 81/06/05 BR CODE READ AMPLIFIER AR00 1.228*432*81 PAGE 3

CODE READ AMPLIFIER PCB 1.228.432-00 GR40 EL2



CODE READ AMPLIFIER PCB 1.228.432-00 GR40 EL2



1.228.432 CODE LESE VERSTÄRKER

Die Signale vom Wiedergabe- und vom Aufnahmehkopf werden symmetrisch den Kopfvorverstärkern zugeführt (IC1 und IC2). Die Umschaltung von Wiedergabe auf Sync geschieht mittels FET-Schaltern. TP1 zeigt das verstärkte Signal vor der Filterstufe. In der Position Filter wide beträgt die Bandbreite 200 kHz. Damit ist es möglich, auch während dem Umspulen Code zu lesen. Die Betriebsart Filter narrow ist hauptsächlich für die Wiedergabe vorgesehen und sorgt für eine gute Geräuschunterdrückung.

Der Ausgang Repro Code Line Out ist umschaltbar, der Pegel ist einstellbar mit R59. Signal auf dem Codekanal wird angezeigt durch die Level-LED. Ein Dreistufenschalter ermöglicht die Anzeige der folgenden 3 Betriebsarten:

- a) Code am Ausgang
- b) Code nach dem schmalen Filter
- c) Code nach dem breiten Filter

Der Ausgang wird mit IC6 gewählt. Dieser Schaltkreis definiert, welcher Code am Ausgang Repro Code Line Out anliegt, d.h. das TLS kann zum Beispiel mit dem Code vom Sync-Verstärker arbeiten, während am Ausgang Repro Code Line Out das Codesignal vom Wiedergabekopf anliegt.

Wichtige Signale

Code Signal ab Wiedergabekopf	(AC)
Code Signal ab Synckopf	(AC)
Repro Code Line Out Signal	(AC)
Signal Codespur bespielt ja/nein	(DC)
Code ab Wiedergabekanal	(DC)
Code ab Synckopf	(DC)
Filterwähler	(DC)
Ausgang vom Code Leseverstärker zum TLS	
Mastercode oder interner Generator Code von 1.228.431	
Schaltsignale:	
Bsp. REPINSEL = Low, CODOSELB = High	
Code Signal CODIN 1 - S erscheint am Ausgang Y	

REPRO	1/2
SYNCH	1/2
SYMCODO	1/2
B CODEREPR	
REPROSEL	
SYNCHSEL	
FILTNRW/FILTWIDE	
CODIN 1 - S	
INCODREP	
REPINSEL	
CODOSELB	

1.228.432 CODE READ AMPLIFIER

The signals from Repro and synch head are symmetrically fed into the head-preamplifiers (IC1 and IC2). Repro or synch selection is done by Fet-switches. TP1 shows the amplified signal before the filter stage. In Filter wide position the frequency response goes up to 200 kHz. This makes it possible to read code in wind-mode. Filter narrow position is mainly for play operation and enables a good noise suppression. The output at "repro code line out" can be selected, the level is adjustable with R59. Code is indicated by a red LED. A three-position switch enables indication of the following status:

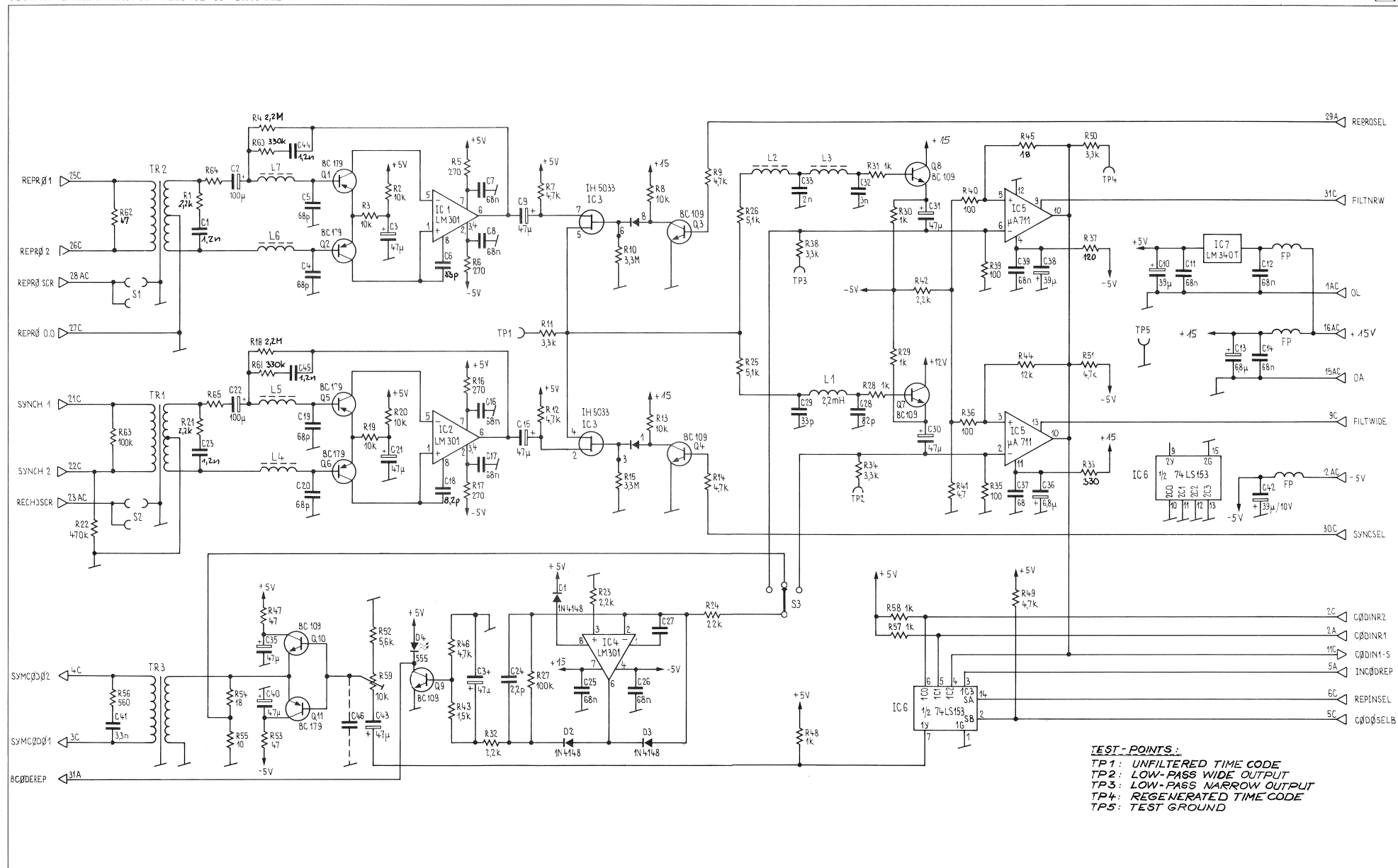
- a) Code at output normal position
- b) Code at pos. filter narrow
- c) Code at pos. filter wide

The output is selected by IC6. This circuit defines what kind of code "repro code line out" indicates. This means e.g. that the TLS can work with the code from the synch-amplifier and at the same time "code line out" reads from the repro-head.

Important signals

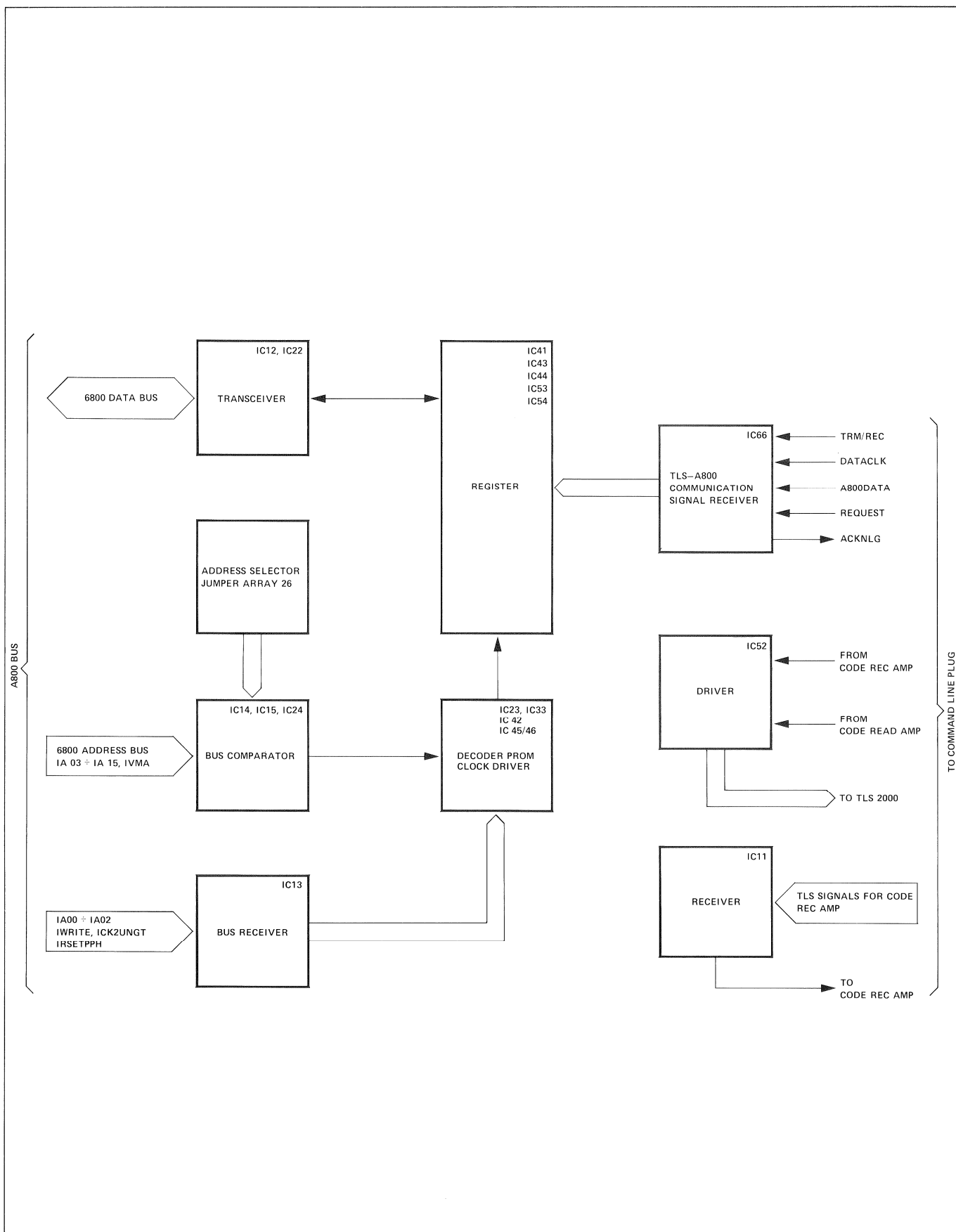
Code signal from repro head	(AC)
Code signal from synch head	(AC)
Repro code line out	(AC)
Signal for LED Code yes/no	(DC)
Select code repro channel	(DC)
Select code synch channel	(DC)
Filterselector	(DC)
Output form code read amplifier to TLS	
Mastercode or Int. Gen. from 1.228.431	
Selectorsignals:	
e.g. REPINSEL = Low, CODOSELB = High	
then: Code Signal CODIN 1 - S appears at output Y	

CODE READ AMPLIFIER PCB 1.228432-00 GR40 EL2

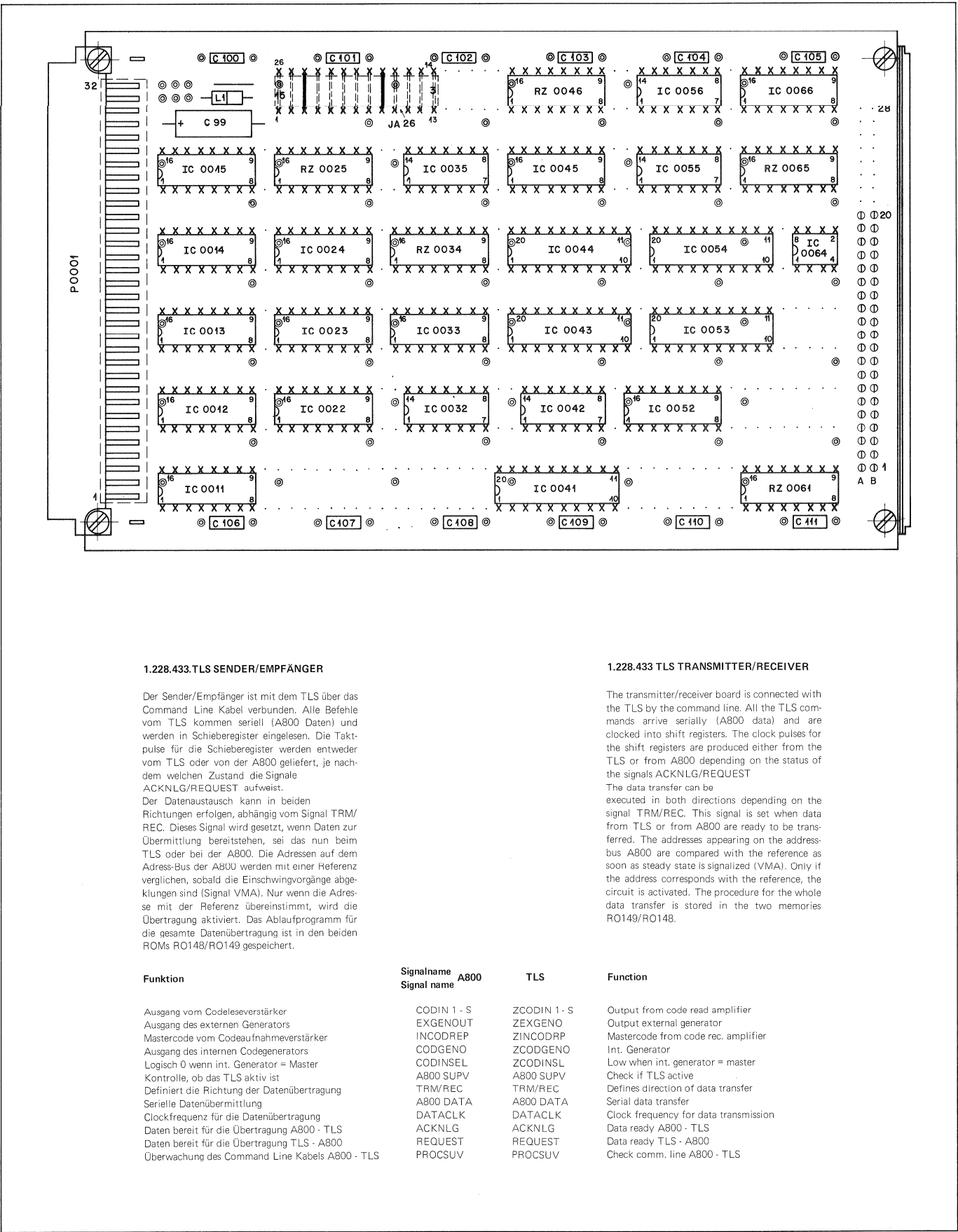


[illegible]

TLS TRANSMITTER / RECEIVER PCB 1.228.433-81/00 GR40 EL3



TLS TRANSMITTER / RECEIVER PCB 1.228.433–81/00 GR40 EL3



[illegible]

TLS TRANSMITTER / RECEIVER PCB 1.228.433-81/00 GR40 EL3

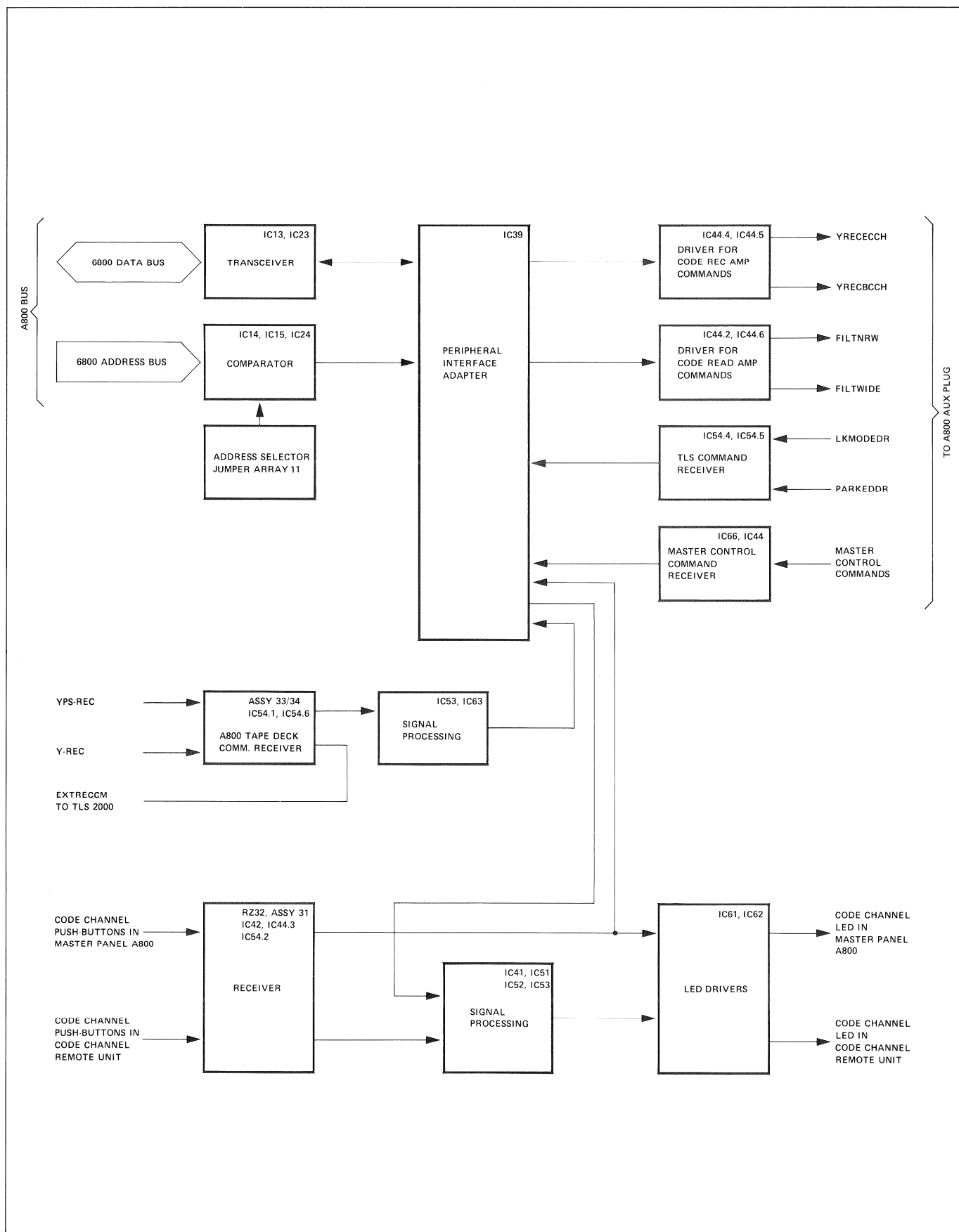
* S T U D E R * POSITION LIST OF ARTS 1.228.433-81 * 78/12/14 * PAGE 1 OF 1 *

* EXPANSION UNIT * TLS TRANSM / RECEIVER IN A800 * 81/06/25-4 *

IM STAMM NICHT VORHANDEN = ' * '

POSITION RD. POS.M	PART NO. DESCRIPTION OF PART	POSITION RD. POS.M	PART NO. DESCRIPTION OF PART
C 0099	59.99.0201 C 6.8 J , 20%, 35V , TA	P 0001	54.01.0354 P LEISTE 3 * 32 POL WRAP
C 0100	59.99.0205 C 68 N , -20%, 63V , KER	RZ 0025	57.85.3102 RZ 15*1 K , 2%, DIL16
C 0101	59.99.0205 C 68 N , -20%, 63V , KER	RZ 0034	57.85.3102 RZ 15*1 K , 2%, DIL16
C 0102	59.99.0205 C 68 N , -20%, 63V , KER	RZ 0046	57.85.3102 RZ 15*1 K , 2%, DIL16
C 0103	59.99.0205 C 68 N , -20%, 63V , KER	RZ 0061	57.80.0101 RZ 14*330/220,2%, DIL16
C 0104	59.99.0205 C 68 N , -20%, 63V , KER	RZ 0065	57.80.0101 RZ 14*330/220,2%, DIL16
C 0105	59.99.0205 C 68 N , -20%, 63V , KER		
C 0106	59.99.0205 C 68 N , -20%, 63V , KER		
C 0107	59.99.0205 C 68 N , -20%, 63V , KER		
C 0108	59.99.0205 C 68 N , -20%, 63V , KER		
C 0109	59.99.0205 C 68 N , -20%, 63V , KER		
C 0110	59.99.0205 C 68 N , -20%, 63V , KER		
C 0111	59.99.0205 C 68 N , -20%, 63V , KER		
IC 0011	50.05.0217 IC N 8T37B, TTL		
IC 0012	50.05.0260 IC 8T28 , TTL-3		
IC 0013	50.05.0217 IC N 8T37B, TTL		
IC 0014	50.05.0263 DM 8131 *		
IC 0015	50.05.0263 DM 8131 *		
IC 0022	50.05.0260 IC 8T28 , TTL-3		
IC 0023	1.025.014.80 R0148 *		
IC 0024	50.05.0263 DM 8131 *		
IC 0032	50.05.0264 8 T 09 *		
IC 0033	1.025.014.90 R0149 *		
IC 0035	50.05.0264 8 T 09 *		
IC 0041	50.06.0299 SN74LS299 *		
IC 0042	50.06.0032 IC SN 74 LS 32 N TTL		
IC 0043	50.06.0299 SN74LS299 *		
IC 0044	50.06.0299 SN74LS299 *		
IC 0045	50.05.0216 IC N 8 T 95B, ,TTL-3		
IC 0052	50.05.0224 IC N 8T95B, TTL-3		
IC 0053	50.06.0299 SN74LS299 *		
IC 0054	50.06.0299 SN74LS299 *		
IC 0055	50.05.0264 8 T 09 *		
IC 0056	50.05.0110 IC SN 7410-N,FLH 111 ,TTL		
IC 0064	50.05.0203 IC SN 75463P,LM 3613 N, DRIV		
IC 0066	50.05.0217 IC N 8T37B, TTL		

TLS MASTER INTERFACE A800 1.228.434-83/82 GR40 EL4



[illegible]

1.228.434 TLS MASTER INTERFACE A800

The TLS Interface handles two important functions

1. Code channel control
2. Master control

This board enables the A800 to read and record time code. The TLS E-Prom on the CPU A800 is needed as soon as the interface is inserted:

On Print 1.228.434 there is a signal MST ACT which indicates that the interface is connected. From this moment on the processor runs an additional loop which includes the communication with the TLS interfaces.

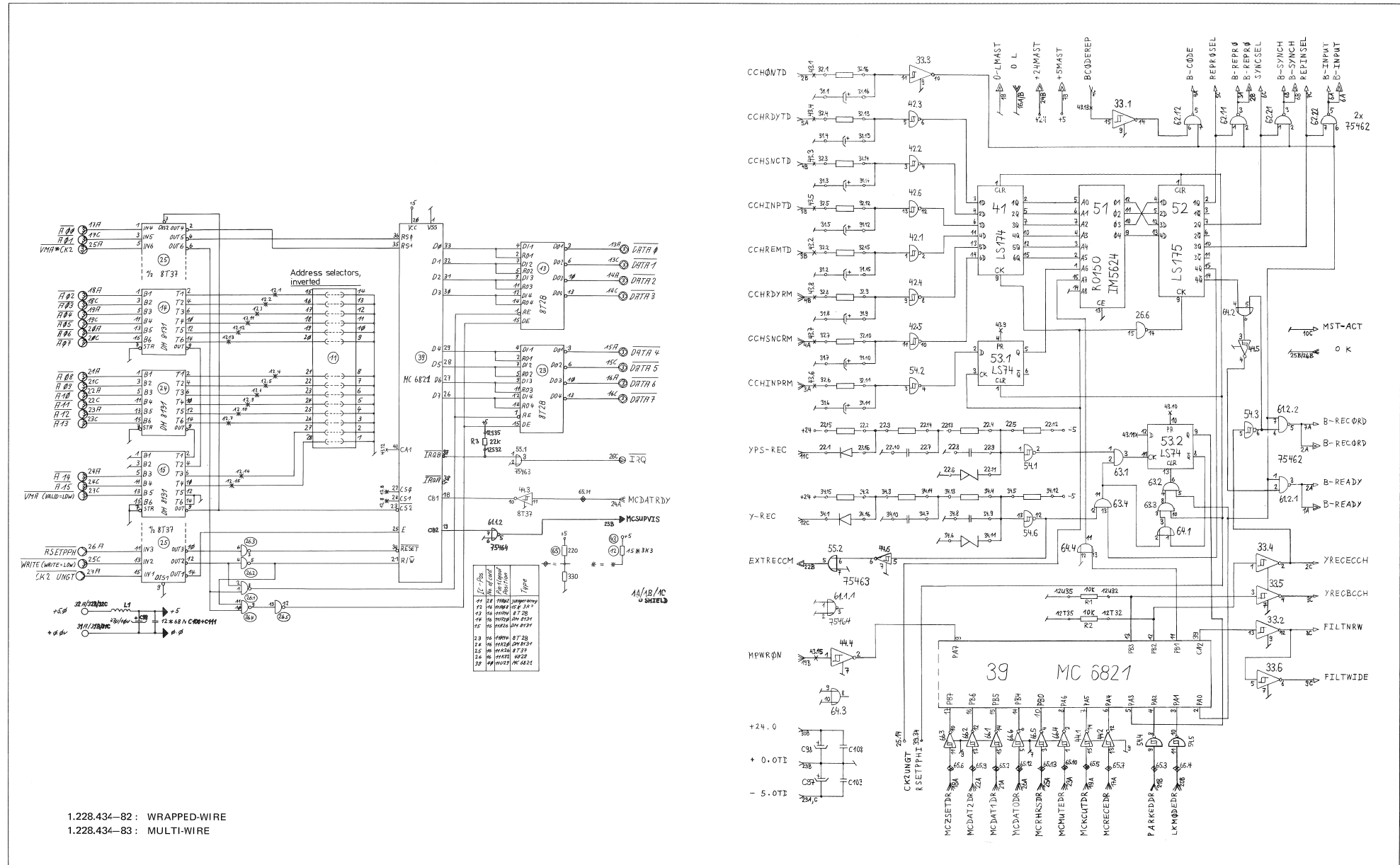
As soon as the address bus indicates the right value, the data transceivers are activated and data transfer is enabled.

Master control commands are accepted by IC39 and sent to the MPU for execution. The code channel control is mainly done by the interface itself. The program for this procedure is stored in Prom 0150. The input-output operation of IC39 is controlled by the CPU.

Important signals

Reset pulse
Master control enable
Master control data ready - A800
Interrupt request
Check if address valid
Clock pulse ungated
processor-signal Rec
push button-signal Rec
TLS connected

TLS MASTER INTERFACE A800 1.228.434-83/82 GR40 EL4



TLS MASTER INTERFACE A800 1.228.434-83/82 GR40 EL4

* S T U D E R * POSITION LIST OF PARTS 1.228.434.83/82* * PAGE 1 OF 1 *

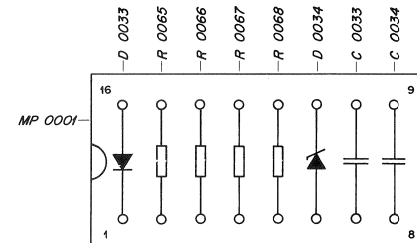
* EXPANSION UNIT * TLS MASTER INTERFACE A800 * 81/06/25-3 *

POSITION RD. POS.M	PART NO. DESCRIPTION OF PART	POSITION RD. POS.M	PART NO. DESCRIPTION OF PART
A 0022	1.228.541.00 ASSEMBLY 08-14	IC 00621	50.05.0227 IC SN75462P ,LM 75462 , DRIV
A 0031	1.228.577.00 ASSEMBLY 17-34	IC 00622	50.05.0227 IC SN75462P ,LM 75462 , DRIV
A 0034	1.228.541.00 ASSEMBLY 08-14	IC 0063	50.06.0008 IC SN 74 LS 08 N TTL
C 0097	59.99.0202 C 39 U , 20%, 10V , TA	IC 0064	50.06.0032 IC SN 74 LS 32 N TTL
C 0098	59.99.0201 C 68 U , 20%, 35V , TA	IC 0066	50.05.0217 IC N 8T37B, TTL
C 0099	59.99.0202 C 39 U , 20%, 10V , TA	P 0001	54.01.0354 P LEISTE 3 * 32 PCL WRAP
C 0100	59.99.0205 C 68 N , -20%, 63V , KER	R 0001	57.02.5103 R 10 K , 10%, .25W , CMA
C 0101	59.99.0205 C 68 N , -20%, 63V , KER	R 0002	57.02.5103 R 10 K , 10%, .25W , CMA
C 0102	59.99.0205 C 68 N , -20%, 63V , KER	R 0003	57.02.5223 R 22 K , 10%, .25W , CMA
C 0103	59.99.0205 C 68 N , -20%, 63V , KER	RZ 0012	57.05.3332 RZ 15*3.3K , 2%, DILL16
C 0104	59.99.0205 C 68 N , -20%, 63V , KER	RZ 0032	57.83.3101 RZ 8*100 2% DIL
C 0105	59.99.0205 C 68 N , -20%, 63V , KER	RZ 0043	57.85.3103 RZ 15*10K , 2%, DIL
C 0106	59.99.0205 C 68 N , -20%, 63V , KER	RZ 0065	57.80.0101 RZ 14*330/220,2%, DILL16
C 0107	59.99.0205 C 68 N , -20%, 63V , KER	IC 00614	50.05.0204 IC SN 75464P ,LM75464 DRIV
C 0108	59.99.0205 C 68 N , -20%, 63V , KER		
C 0109	59.99.0205 C 68 N , -20%, 63V , KER		
C 0110	59.99.0205 C 68 N , -20%, 63V , KER		
C 0111	59.99.0205 C 68 N , -20%, 63V , KER		
IC 0013	50.05.0260 IC 8120 , TTL-3		
IC 0014	50.05.0263 IC DM 8131 N TTL		
IC 0015	50.05.0263 IC DM 8131 N TTL		
IC 0023	50.05.0260 IC 8178 , TTL-3		
IC 0024	50.05.0263 IC DM 8131 N TTL		
IC 0025	50.05.0217 IC N 8T37B, TTL		
IC 0026	50.05.0126 IC SN 4929-N,FLH 251 ,TTL		
IC 0033	50.05.0217 IC N 8T37B, TTL		
IC 0039	50.05.0270 IC MC 6821P , PIA NMOS		
IC 0041	50.06.0174 IC SN 74 LS 174 N TTL		
IC 0042	50.06.0014 IC SN 74 LS 14 N TTL		
IC 0044	50.05.0217 IC N 8T37B, TTL		
IC 0051	1.025.015.00 PROM R 0150		
IC 0052	50.06.0175 IC SN 74 LS 175 N TTL		
IC 0053	50.06.0074 IC SN 74 LS 74 N TTL		
IC 0054	50.06.0014 IC SN 74 LS 14 N TTL		
IC 0055	50.05.0203 IC SN 75463P ,LM 3613 N, DRIV		
IC 00612	50.05.0227 IC SN75462P ,LM 75462 , DRIV		

* S T U D E R * POSITION LIST OF PARTS 1.228.541.00

* TAPE LOCK SYSTEM 2000 * ASS.08-14

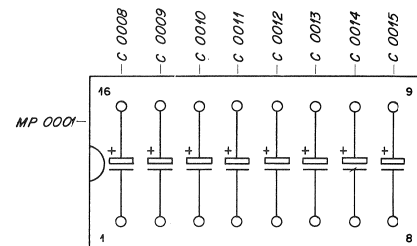
POSITION RD. POS.M	PART NO. DESCRIPTION OF PART
C 0033	59.99.0205 C 68 N , -20%, 63V , KER
C 0034	59.32.3103 C 10 N , +80% 40%, KER
D 0033	50.04.0125 D 1N 4448 ST
D 0034	50.04.1107 D 3.3 V, 5%, .40 W, PLANAR
MP 0001	53.03.0170 MP ADAPTOR PLUG 2*8*0.3 DIL
R 0065	57.02.5332 R 3.3 K , 10%, .25W , CMA
R 0066	57.02.5222 R 2.2 K , 10%, .25W , CMA
R 0067	57.02.5222 R 2.2 K , 10%, .25W , CMA
R 0068	57.02.5472 R 4.7 K , 10%, .25W , CMA



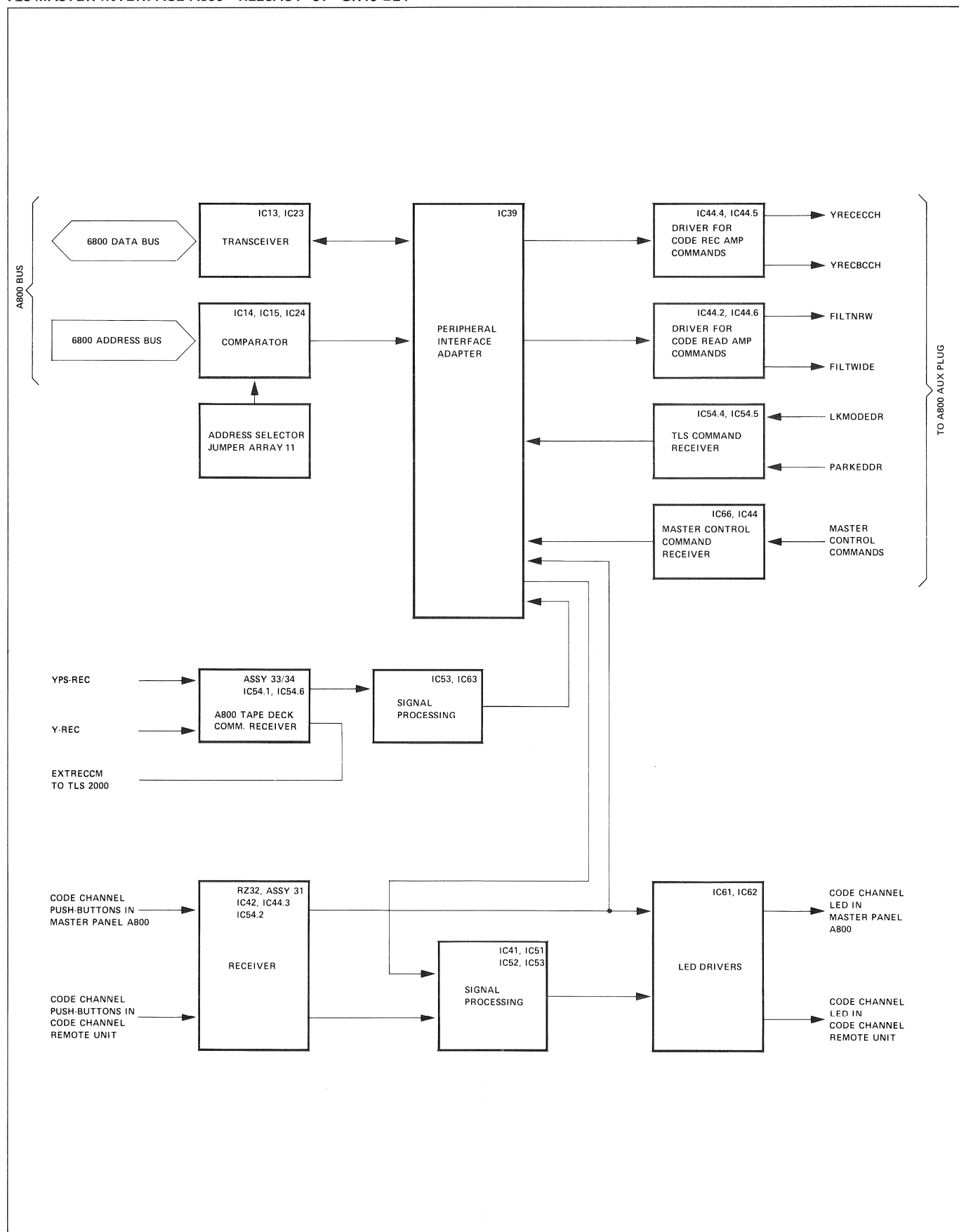
* S T U D E R * POSITION LIST OF PARTS 1.228.577.00

* TAPE LOCK SYSTEM 2000 * ASS.17-34

POSITION RD. POS.M	PART NO. DESCRIPTION OF PART
C 0008	59.99.0203 C 3.3 U , 20%, 10V , TA
C 0009	59.99.0203 C 3.3 U , 20%, 10V , TA
C 0010	59.99.0203 C 3.3 U , 20%, 10V , TA
C 0011	59.99.0203 C 3.3 U , 20%, 10V , TA
C 0012	59.99.0203 C 3.3 U , 20%, 10V , TA
C 0013	59.99.0203 C 3.3 U , 20%, 10V , TA
C 0014	59.99.0203 C 3.3 U , 20%, 10V , TA
C 0015	59.99.0203 C 3.3 U , 20%, 10V , TA
MP 0001	53.03.0170 MP ADAPTOR PLUG 2*8*0.3 DIL

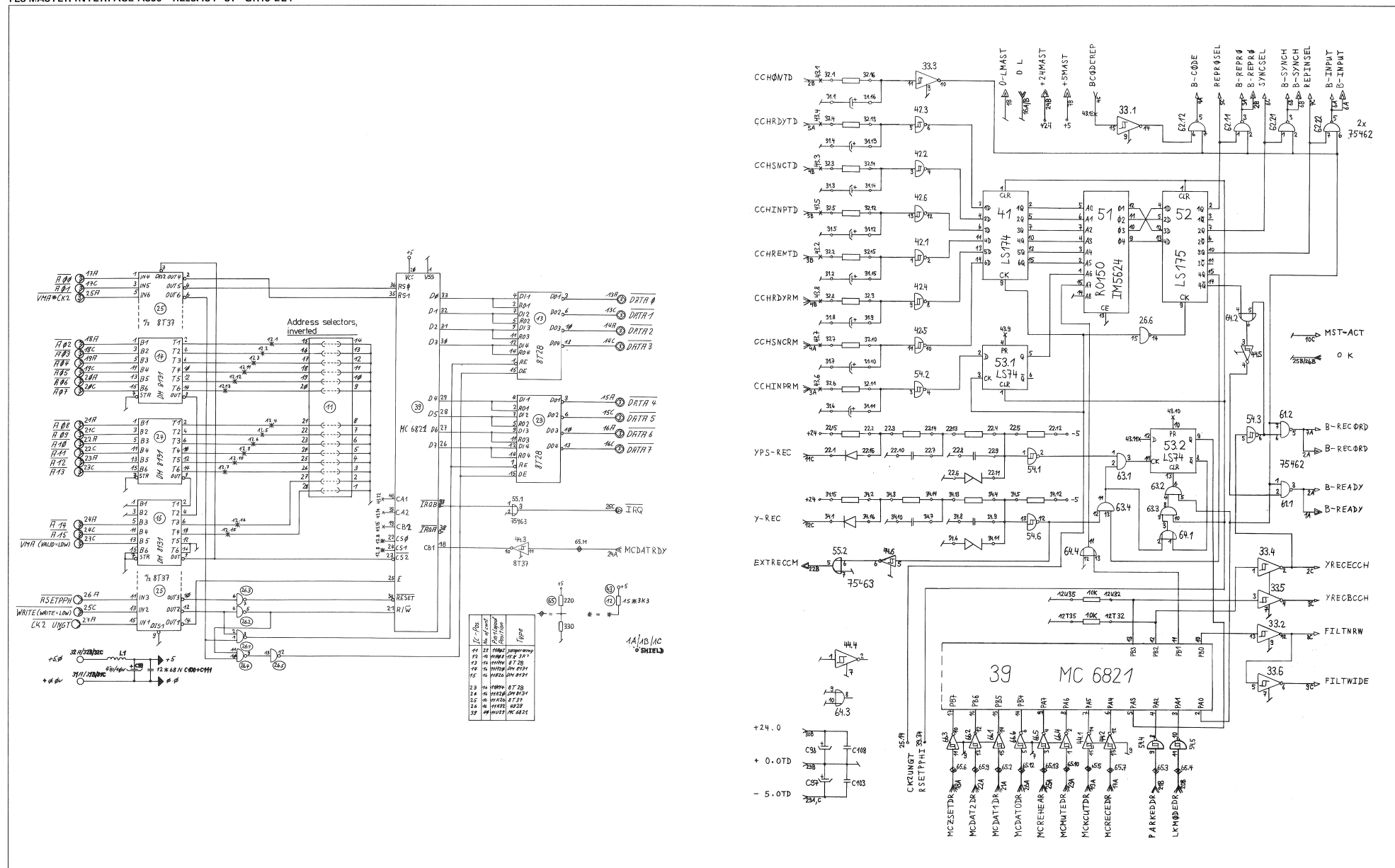


TLS MASTER INTERFACE A800 1.228.434-81 GR40 EL4



POSITION RD. POS.#	PART NO.	DESCRIPTION OF PART	POSITION RD. POS.#	PART NO.	DESCRIPTION OF PART
A 0022	1.228.541.00	ASSEMBLY 08-14	IC 00621	50.05.0227	IC SN75462P ,LM 75462 , DRIV
A 0031	1.228.577.00	ASSEMBLY 17-34	IC 00622	50.05.0227	IC SN75462P ,LM 75462 , DRIV
A 0034	1.228.541.00	ASSEMBLY 08-14	IC 0063	50.06.0008	IC SN 74 LS 08 N TTL
C 0097	59.99.0202	C 39 U , 20%, 10V , TA	IC 0064	50.06.0032	IC SN 74 LS 32 N TTL
C 0098	59.99.0201	C 6.8 U , 20%, 35V , TA	IC 0066	50.05.0217	IC N 8T37B, TTL
C 0099	59.99.0202	C 39 U , 20%, 10V , TA	P 0001	54.01.0354	P LEISTE 3 * 32 PDL WRAP
C 0100	59.99.0205	C 68 N , -20%, 63V , KER	R 0001	57.02.5103	R 10 K , 10%, .25W , CMA
C 0101	59.99.0205	C 68 N , -20%, 63V , KER	R 0002	57.02.5103	R 10 K , 10%, .25W , CMA
C 0102	59.99.0205	C 68 N , -20%, 63V , KER	R 0003	57.02.5223	R 22 K , 10%, .25W , CMA
C 0103	59.99.0205	C 68 N , -20%, 63V , KER	RZ 0012	57.85.3332	RZ 15*3.3K, 2%, DIL16
C 0104	59.99.0205	C 68 N , -20%, 63V , KER	RZ 0032	57.88.3101	RZ 8*100 2% DIL
C 0105	59.99.0205	C 68 N , -20%, 63V , KER	RZ 0043	57.85.3103	RZ 15*10K , 2%, DIL
C 0106	59.99.0205	C 68 N , -20%, 63V , KER	RZ 0065	57.80.0101	RZ 14*330/220,2%, DIL16
C 0107	59.99.0205	C 68 N , -20%, 63V , KER			
C 0108	59.99.0205	C 68 N , -20%, 63V , KER			
C 0109	59.99.0205	C 68 N , -20%, 63V , KER			
C 0110	59.99.0205	C 68 N , -20%, 63V , KER			
C 0111	59.99.0205	C 68 N , -20%, 63V , KER			
IC 0013	50.05.0260	IC 8T28 , TTL-3			
IC 0014	50.05.0263	IC DM 8131 N TTL			
IC 0015	50.05.0263	IC DM 8131 N TTL			
IC 0023	50.05.0260	IC 8T28 , TTL-3			
IC 0024	50.05.0263	IC DM 8131 N TTL			
IC 0025	50.05.0217	IC N 8T37B, TTL			
IC 0026	50.05.0126	IC SN 4929-N,FLH 251 ,TTL			
IC 0033	50.05.0217	IC N 8T37B, TTL			
IC 0039	50.05.0270	IC MC 6821P PIA NMOS			
IC 0041	50.06.0174	IC SN 74 LS 174 N TTL			
IC 0042	50.06.0014	IC SN 74 LS 14 N TTL			
IC 0044	50.05.0217	IC N 8T37B, TTL			
IC 0051	1.025.015.00	PROM R 0150			
IC 0052	50.06.0175	IC SN 74 LS 175 N TTL			
IC 0053	50.06.0074	IC SN 74 LS 74 N TTL			
IC 0054	50.06.0014	IC SN 74 LS 14 N TTL			
IC 0055	50.05.0203	IC SN75463P,LM 3613 N, DRIV			
IC 0061	50.05.0227	IC SN75462P ,LM 75462 , DRIV			

26.09.78

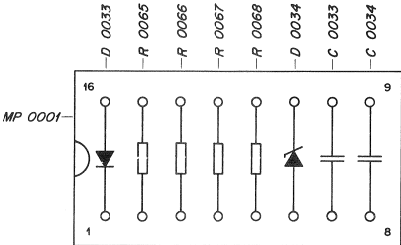


TLS MASTER INTERFACE A800 1.228.434-81 GR40 EL4

* S T U D E R * POSITION LIST OF PARTS 1.228.541.00

* TAPE LOCK SYSTEM 2000 * ASS.08-14

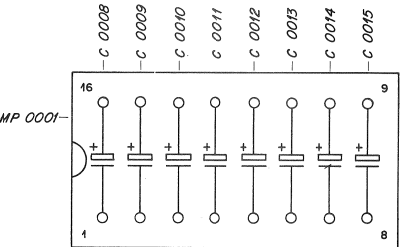
POSITION RD. POS.M	PART NO.	DESCRIPTION OF PART
C 0033	59.99.0205 C	66 N , 20%, 63V , KER
C 0034	59.32.3103 C	10 N , 80% 40%, KER
D 0033	50.04.0125 D	1N 444B SI
D 0034	50.04.1107 D	3.3 V , 5%, .40 W,Z,PLANAR
MP 0001	53.03.0170 MP	ADAPTOR PLUG 2*8*0.3 DIL
R 0065	57.02.5332 R	3.3 K , 10%, .25W , CMA
R 0066	57.02.5222 R	2.2 K , 10%, .25W , CMA
R 0067	57.02.5222 R	2.2 K , 10%, .25W , CMA
R 0068	57.02.5412 R	4.7 K , 10%, .25W , CMA



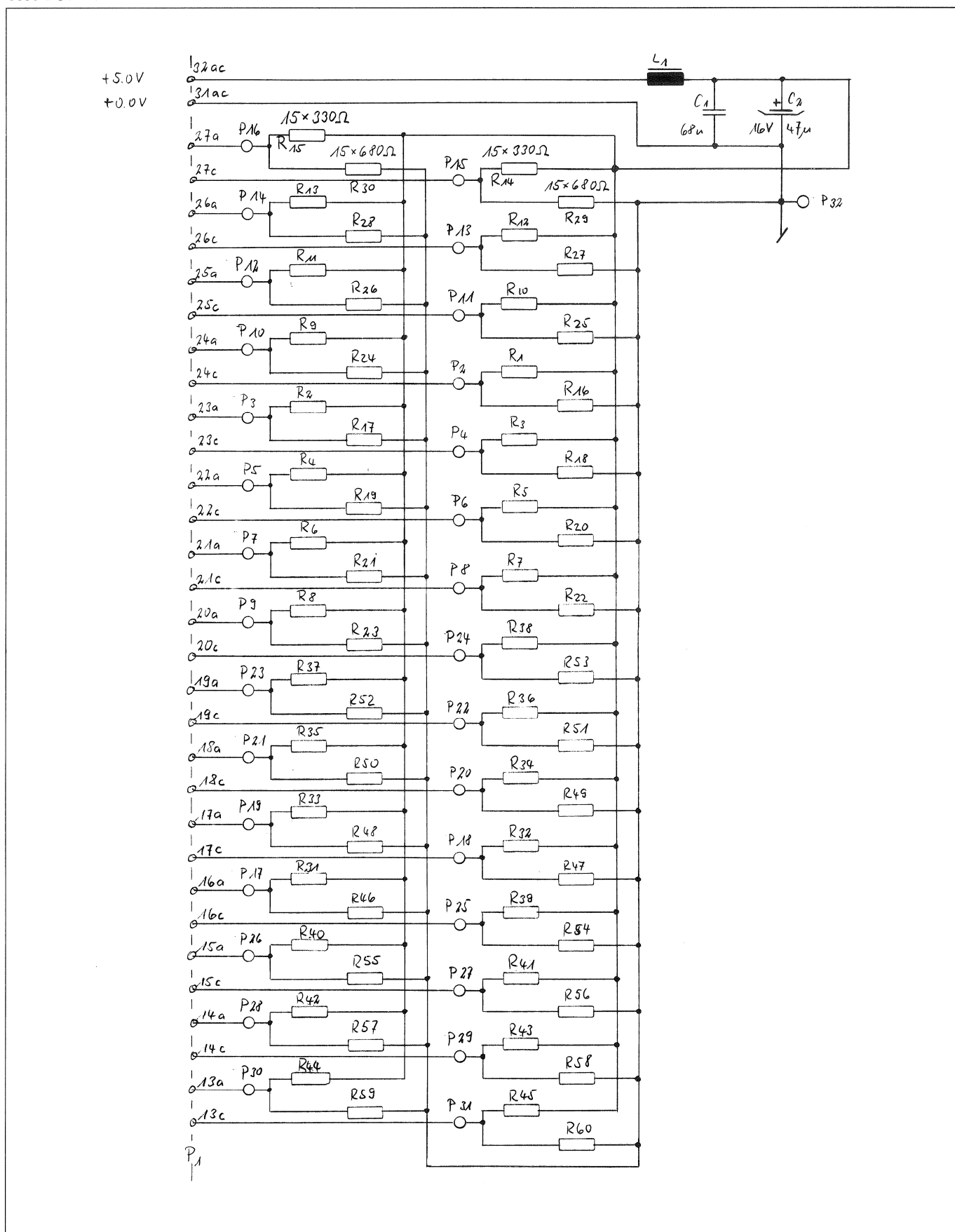
* S T U D E R * POSITION LIST OF PARTS 1.228.577.00

* TAPE LOCK SYSTEM 2000 * ASS.17-34

POSITION RD. POS.M	PART NO.	DESCRIPTION OF PART
C 0008	59.99.0203 C	3.3 U , 20%, 10V , TA
C 0009	59.99.0203 C	3.3 U , 20%, 10V , TA
C 0010	59.99.0203 C	3.3 U , 20%, 10V , TA
C 0011	59.99.0203 C	3.3 U , 20%, 10V , TA
C 0012	59.99.0203 C	3.3 U , 20%, 10V , TA
C 0013	59.99.0203 C	3.3 U , 20%, 10V , TA
C 0014	59.99.0203 C	3.3 U , 20%, 10V , TA
C 0015	59.99.0203 C	3.3 U , 20%, 10V , TA
MP 0001	53.03.0170 MP	ADAPTOR PLUG 2*8*0.3 DIL

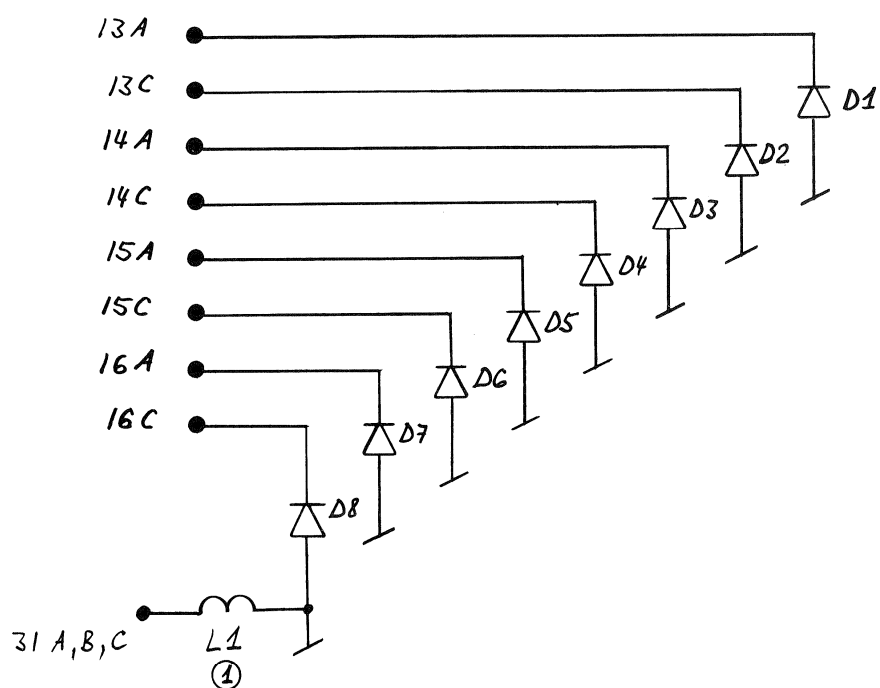


6800 BUS TERMINATION PCB 1.180.541 GR40 EL6



[illegible]

BUS TERMINATION 2 PCB 1.180.542-00 GR40 EL10



D1... D8 1N5818

L1 : Breitbanddrossel 4312 020 36700

Philips

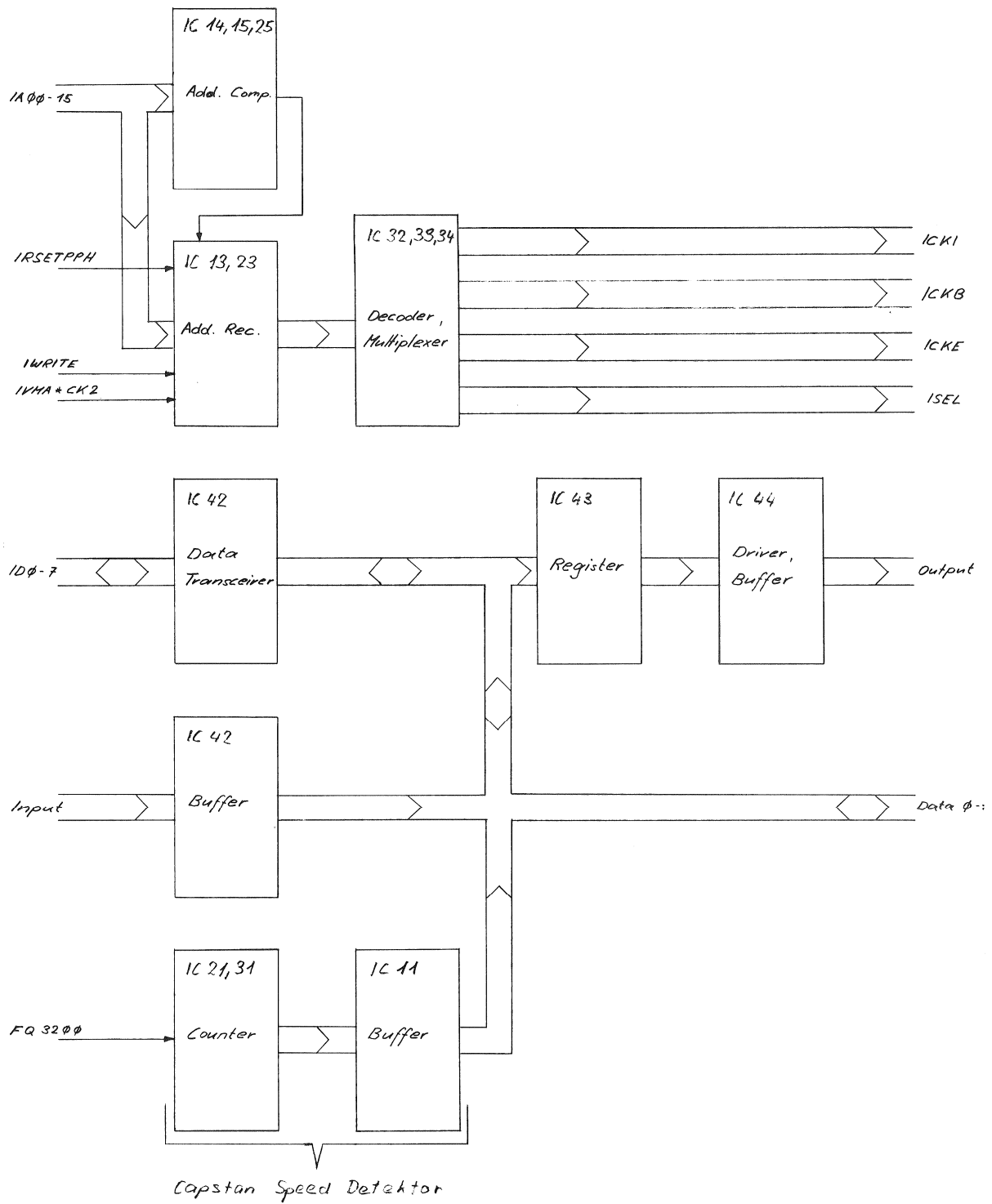
INO.	POS.NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
	D.....1	50.04.0512	1N 5818		Motorola
	D.....2	50.04.0512	1N 5818		Motorola
	D.....3	50.04.0512	1N 5818		Motorola
	D.....4	50.04.0512	1N 5818		Motorola
	D.....5	50.04.0512	1N 5818		Motorola
	D.....6	50.04.0512	1N 5818		Motorola
	D.....7	50.04.0512	1N 5818		Motorola
	D.....8	50.04.0512	1N 5818		Motorola
(01)	L.....1	62.01.0115		Interference coil, Philips Nr 4312 020 36700	

(01) 84.08.20 Improved interference suppression.

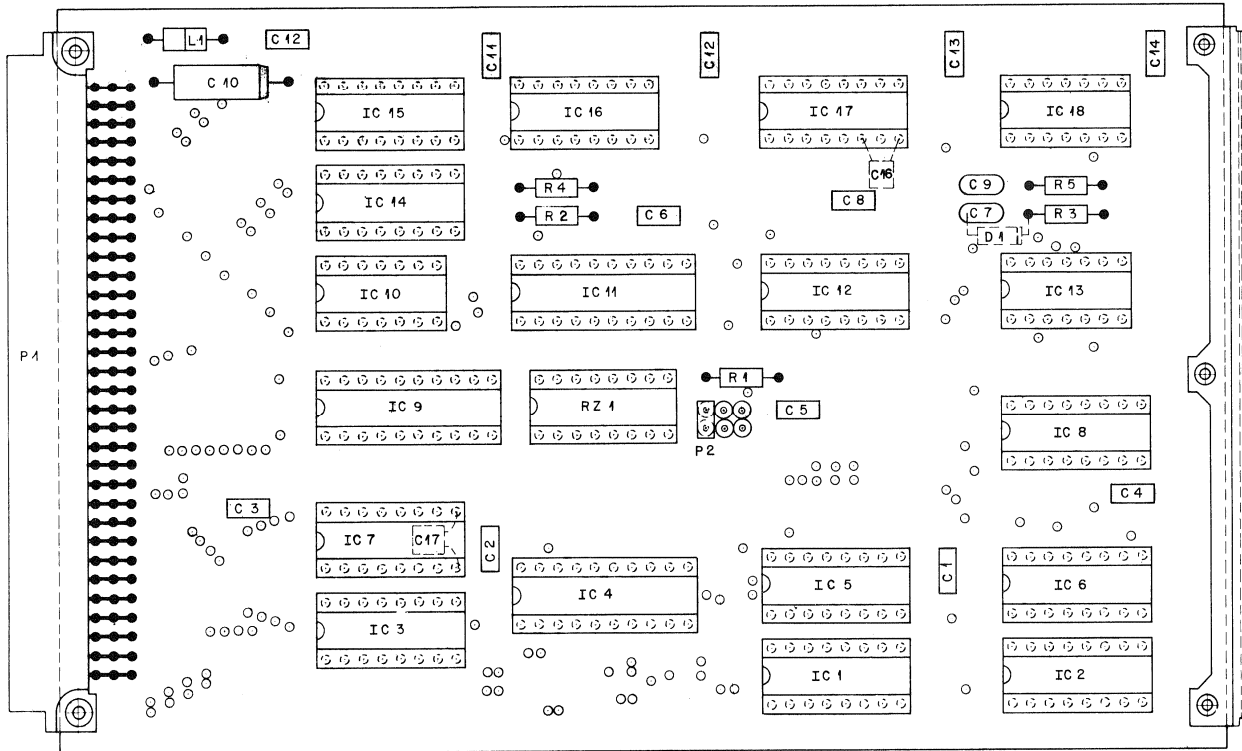
DRIG 84/06/12 (01) 84/08/20

S T U D E R (01) 84/08/20 PB BUS TERMINATION 2 1.180.542.00 PAGE 1

DELAY CONTROL PCB 1.180.551-81 GR40 EL11



DELAY CONTROL PCB 1.180.551-81 GR40 EL11



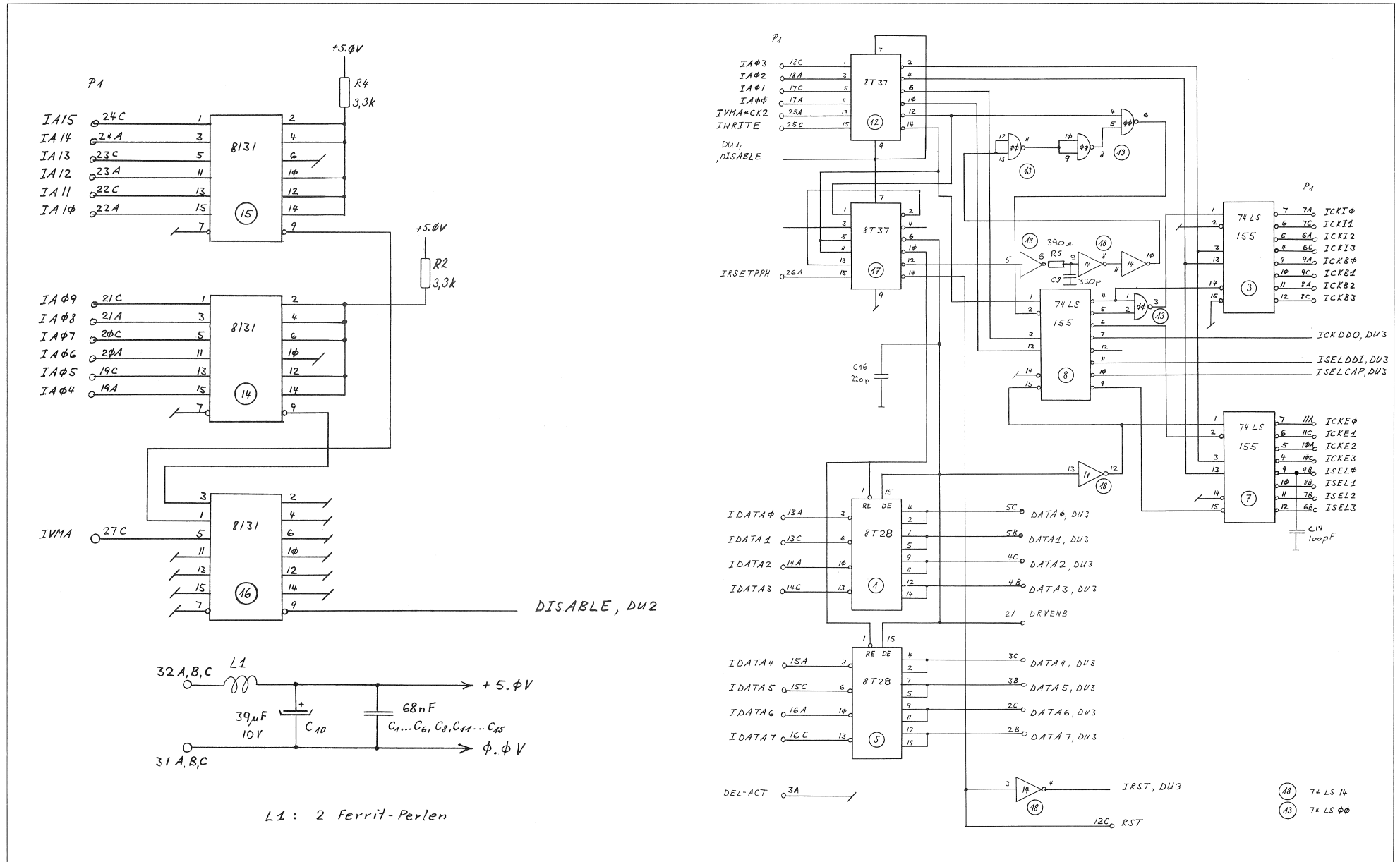
IND	POS NO	PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MFR	
	C1	59.89.0205	68 nF	10V 20%	HER.	
	C2	"	"	"	"	
	C3	"	"	"	"	
	C4	"	"	"	"	
	C5	"	"	"	"	
	C6	"	"	"	"	
	C7	59.32.4471	470 nF	10V 20%	HER	
	C8	59.89.0205	68 nF	10V 20%	"	
	C9	59.34.4331	330 nF	10V 10%	"	
	C10	59.89.0202	47 nF	10V 20%	TA	
	C11	59.89.0205	68 nF	10V 20%	HER	
	C12	"	"	"	"	
	C13	"	"	"	"	
	C14	"	"	"	"	
	C15	"	"	"	"	
①	C16	59.34.4221	220 nF	"	"	
②	C17	59.34.4101	100 nF	"	"	
	IC 1	50.05.0260	N 8T 28 N	4-Input Bus Transivers	TTL	Si
	IC 2	50.06.0161	N 74LS161N	Synch. 4-Bit Counter Binary	TTL	TI
	IC 3	50.06.0155	N 74LS155N	Decoder/Demultiplexer	TTL	TI
	IC 4	50.06.0244	N 74LS244N	Octal Buffer/Line Driv. Receiv.	TTL	TI
	IC 5	50.05.0260	N 8T 28 N	4-Input Bus Transivers	TTL	Si
	IC 6	50.06.0161	N 74LS161N	Synch. 4-Bit Counter Binary	TTL	TI
	IC 7	50.06.0155	N 74LS155N	Decoder/Demultiplexer	TTL	TI
	IC 8	"	"	"	TTL	TI
	IC 9	50.06.0240	N 74LS240N	Octal Buffer/Line Driv. Receiv.	TTL	M
	IC 10	50.05.0127	N 7406 N	Hex Inverter Buffer/Driver	TTL	TI
	IC 11	50.06.0273	N 74LS273N	Octal D-Type Flip-Flops	TTL	TI
	IC 12	50.05.0247	N 8T 37 N	Hex Bus Receiver	TTL	Si

IND	DATE	NAME
①		Si - Signetics
②		TI - Texas Instruments.
③		M - Motorola
④	12.12.85	
⑤	20.1.82	
⑥	7.3.79	M. Kurz
STUDER	Delay Control Card	1.180.551-81 PAGE 1 OF 2

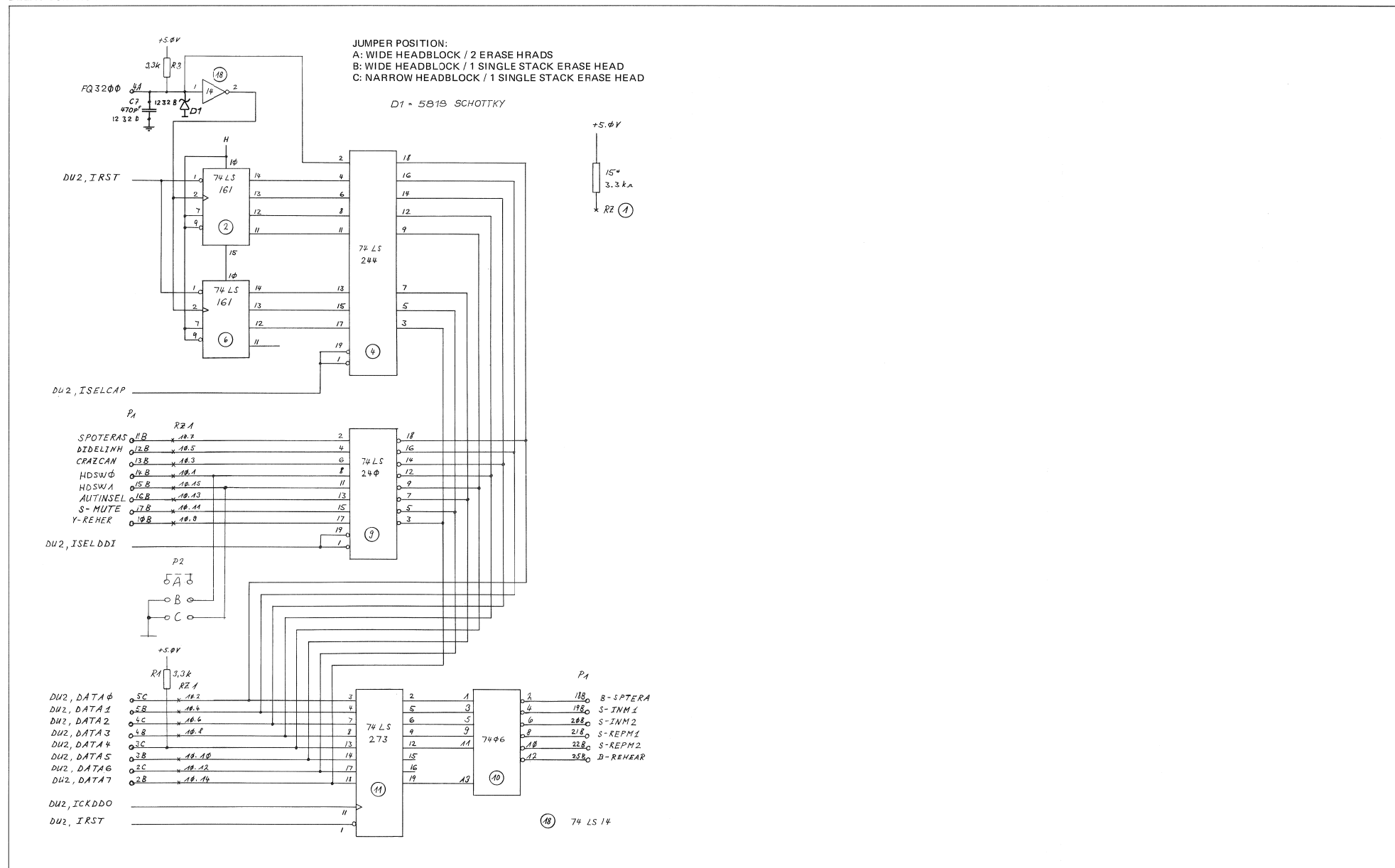
IND	POS NO	PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MFR	
	IC13	50.06.0000	SN74LS00N	4-2-Input Positive/Nand Gates	TTL	TI
	IC14	50.05.0263	DM 8131 N	6-Bit Unified Bus Comparators	TTL	N
	IC15	"	"	"	"	N
	IC16	"	"	"	"	N
	IC17	50.05.0247	NPT37 N	Hex Bus - Receivers	TTL	Si
	IC18	50.06.0046	SN74LS44N	Hex Schmitt-Trigger Inverters	TTL	TI
	L1	6A.99.0A24	34400	Ferrite Core 43.5 x 3		Philips
	P1	54.0A.0358	Europa	3 x 32 Pin , Print		
	P2	54.0A.002Q		2 x 3 Pin		
	R1	57.1A.4332	33k	5% 0.25W CSCH		
	R2	"	33k	" " "		
	R3	"	33k	" " "		
	R4	"	33k	" " "		
	R5	57.1A.4331	330Ω	" " "		
	RZ1	57.85.3337	15 x 33k	2% DIN 16		HB
①	D1	50.04.0512	1N3818	10V, 50 mA, Schottky		M
		</				

IND	DATE	NAME
①		Si - Signetics
②		N - National Semicon.
③		TI - Texas Instruments.
④	12.12.85	
⑤	20.1.82	
⑥	7.3.79	M. Kurz
STUDER	Delay Control Card	1.180.551-81 PAGE 2 OF 2

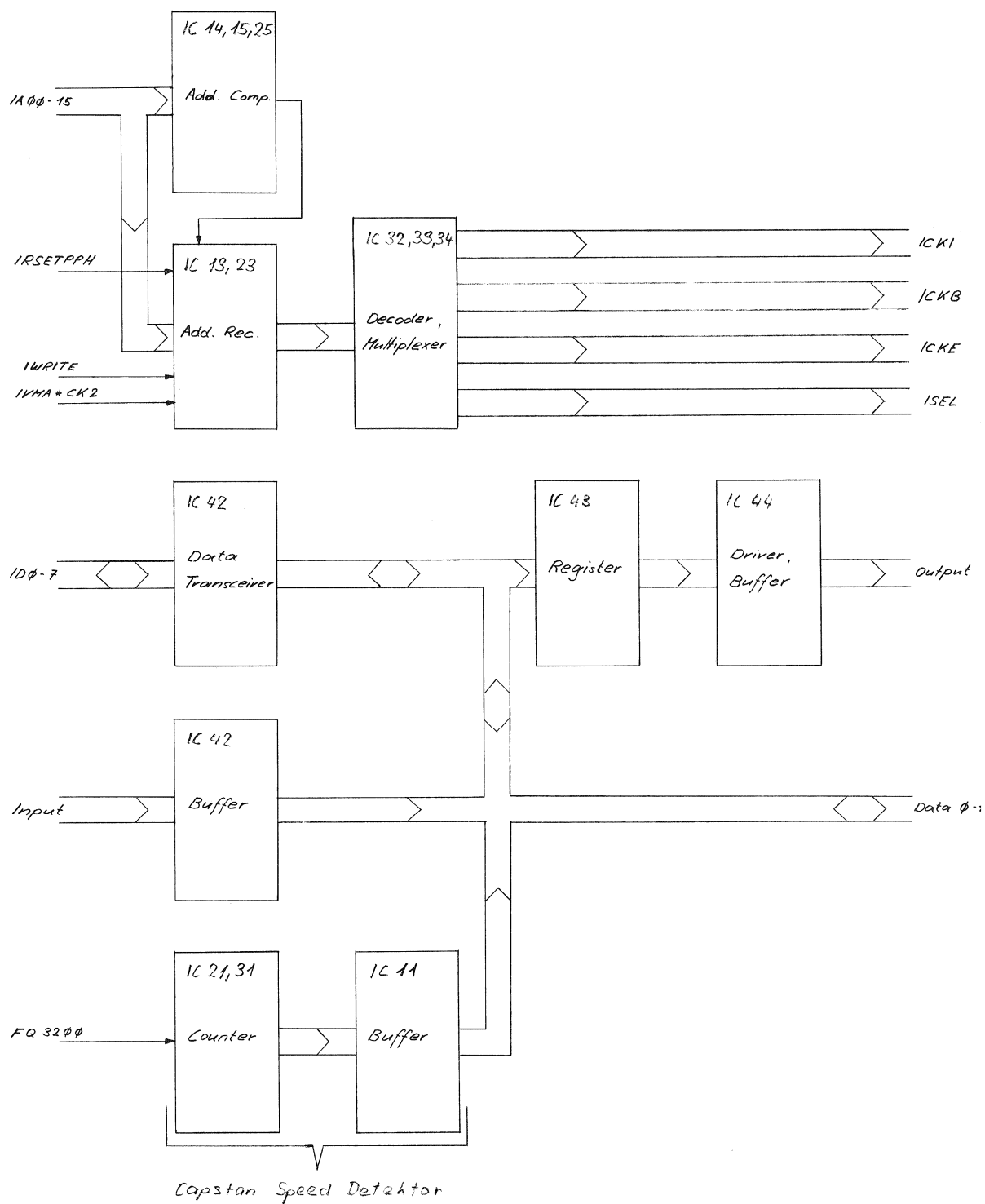
DELAY CONTROL PCB 1.180.551-81 GR40 EI11



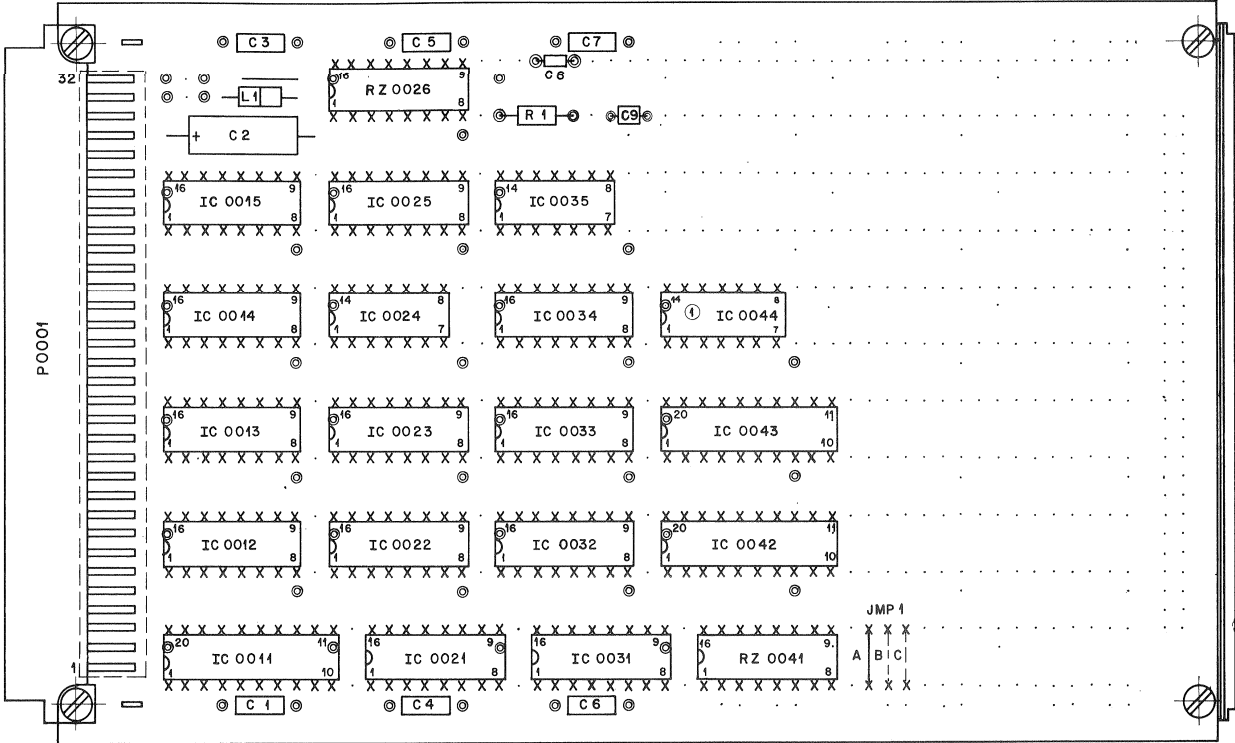
DELAY CONTROL PCB 1.180.551-81 GR40 EL11



DELAY CONTROL PCB 1.180.551-00 GR40 EL11



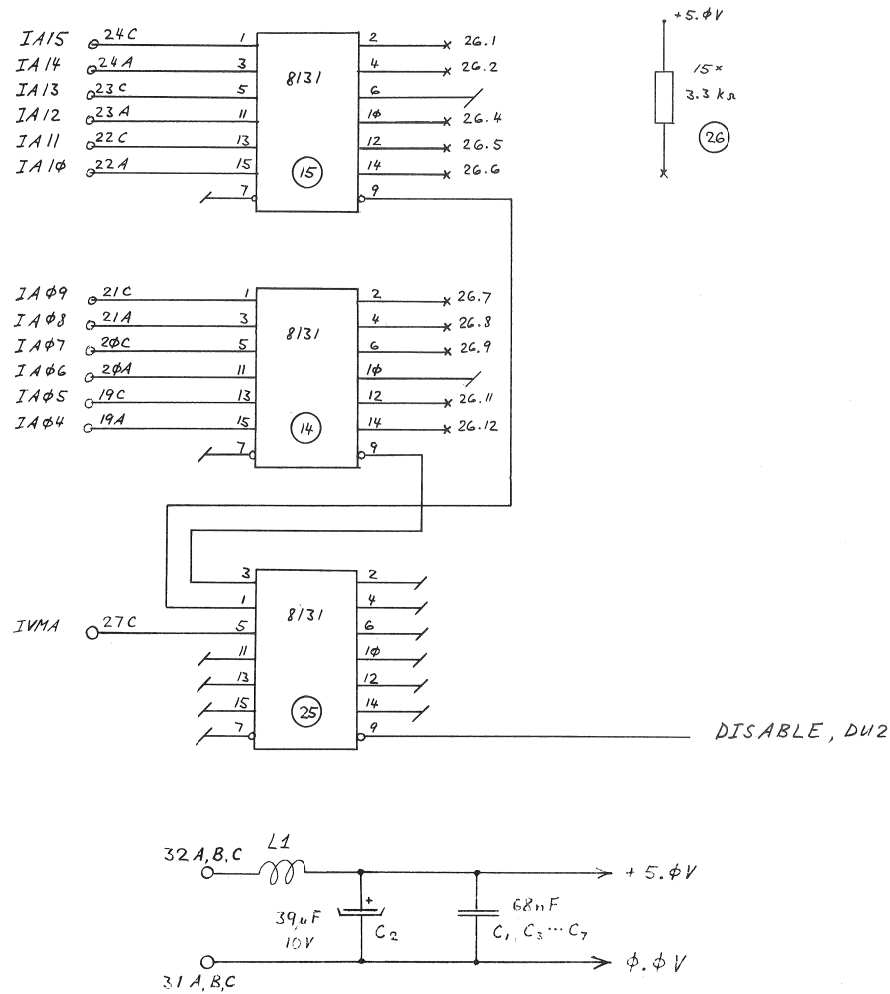
DELAY CONTROL PCB 1.180.551-00 GR40 EL11



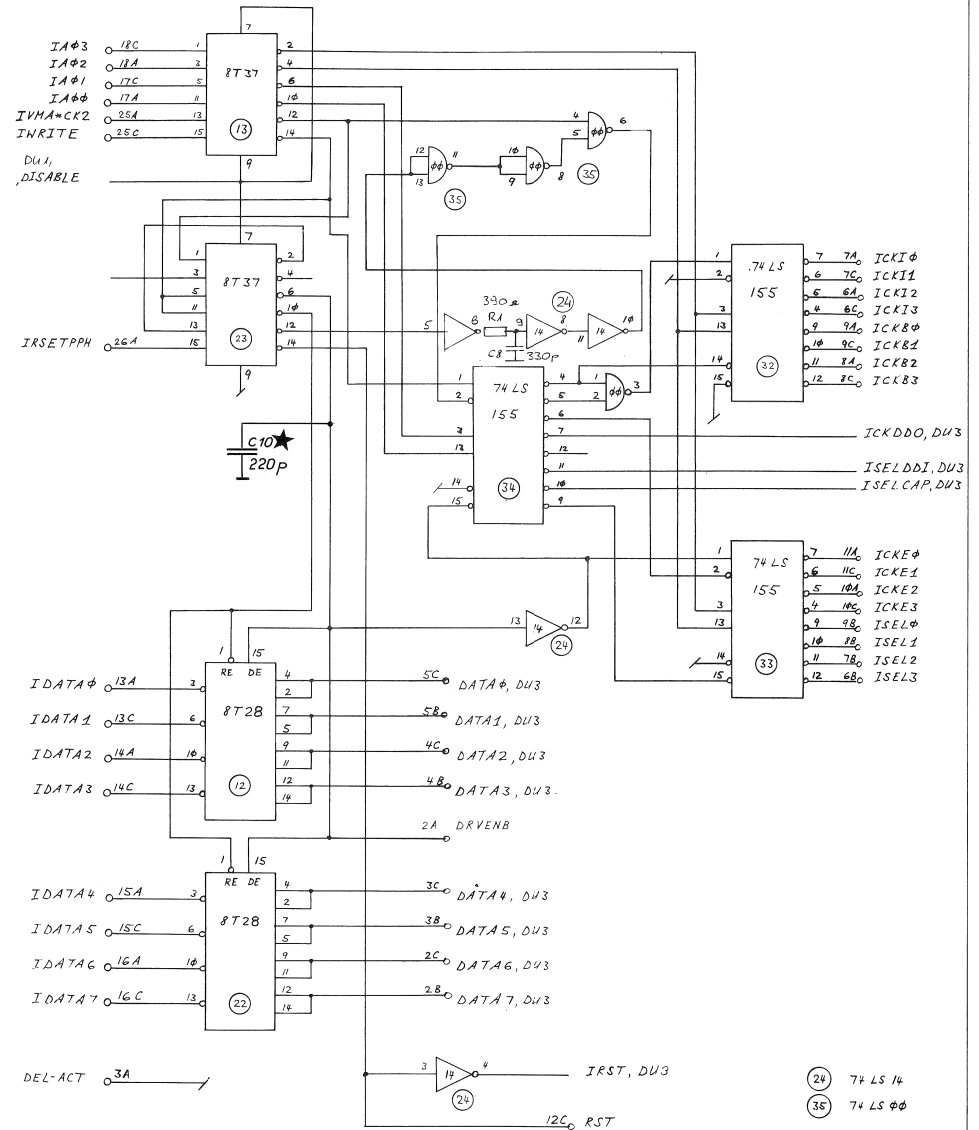
IND	POS NO	PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MFR
	C 01	59.99.0205	68 N	-20% 63V CER	
	C 02	59.99.0202	39 U	10% 10V TA	
	C 03	59.99.0205	68 N	-20% 63V CER	
	C 04	59.99.0205	68 N		
	C 05	59.99.0205	68 N		
	C 06	59.99.0205	68 N		
	C 07	59.99.0205	68 N		
3	C 08	59.34.4331	330 P	5% 63V CER	
3	C 09	59.32.4471	470 P	20% 50V CER	
4	C 10	59.34.4221	220 P		
	IC11	50.06.0244	SN74LS244N	TTL-3	
1	IC12	50.05.0260	N8T28AN	TTL-3 MC8T26A-P	
	IC13	50.05.0217	N8T37B	TTL	
	IC14	50.05.0263	DM8131N	TTL	
	IC15	50.05.0263	DM8131N	TTL	
	IC21	50.06.0161	SN74LS161N	TTL	
1	IC22	50.05.0260	N8T28AN	TTL-3	
	IC23	50.05.0217	N8T37B	TTL	
	IC24	50.06.0014	SN74LS14N	TTL	
	IC25	50.05.0263	DM8131N	TTL	
	IC31	50.06.0161	SN74LS161N	TTL	
	IC32	50.06.0155	SN74LS155N	TTL	
	IC33	50.06.0155	SN74LS155N	TTL	
	IC34	50.06.0155	SN74LS155N	TTL	
	IC35	50.06.0000	SN74LS00N	TTL	
	IC42	50.06.0240	SN74LS240	8-Bit Buffer	
IND	DATE	NAME			
④	11.12.81				
③	14.3.79	HA/			
②	1.11.78	HA/			
①	14.9.78	HA/			
○	24.5.78	HA/gv			
STUDER		Delay Control Card	1.180.551	PAGE 1 OF 2	

IND	POS NO	PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MFR
	IC43	50.06.0273	SN74LS273	8-Bit D-Flip	
2	IC44	50.05.0127	SN7406	Hex Buffer, TTL	
	L 01	61.99.0124		2 Ferritpearls	Ph
	MP01	54.01.0022		Jumper	
	P 01	54.01.0354	3x32	Plug WRAP	
3	R 01	57.11.4391	390	5% .25W CF	
	RZ26	57.85.3332	15 x 3,3k	2% DIL-16	
	RZ41	57.85.3332	15 x 3,3k		
IND	DATE	NAME			
④	11.12.81		Ph = Philips		
③	14.3.79	HA/			
②	1.11.78	HA/			
①	14.9.78	HA/			
○	24.5.78	HA/gv			
STUDER		Delay Control Card	1.180.551	PAGE 2 OF 2	

DELAY CONTROL PCB 1.180.551-00 GR40 EL11

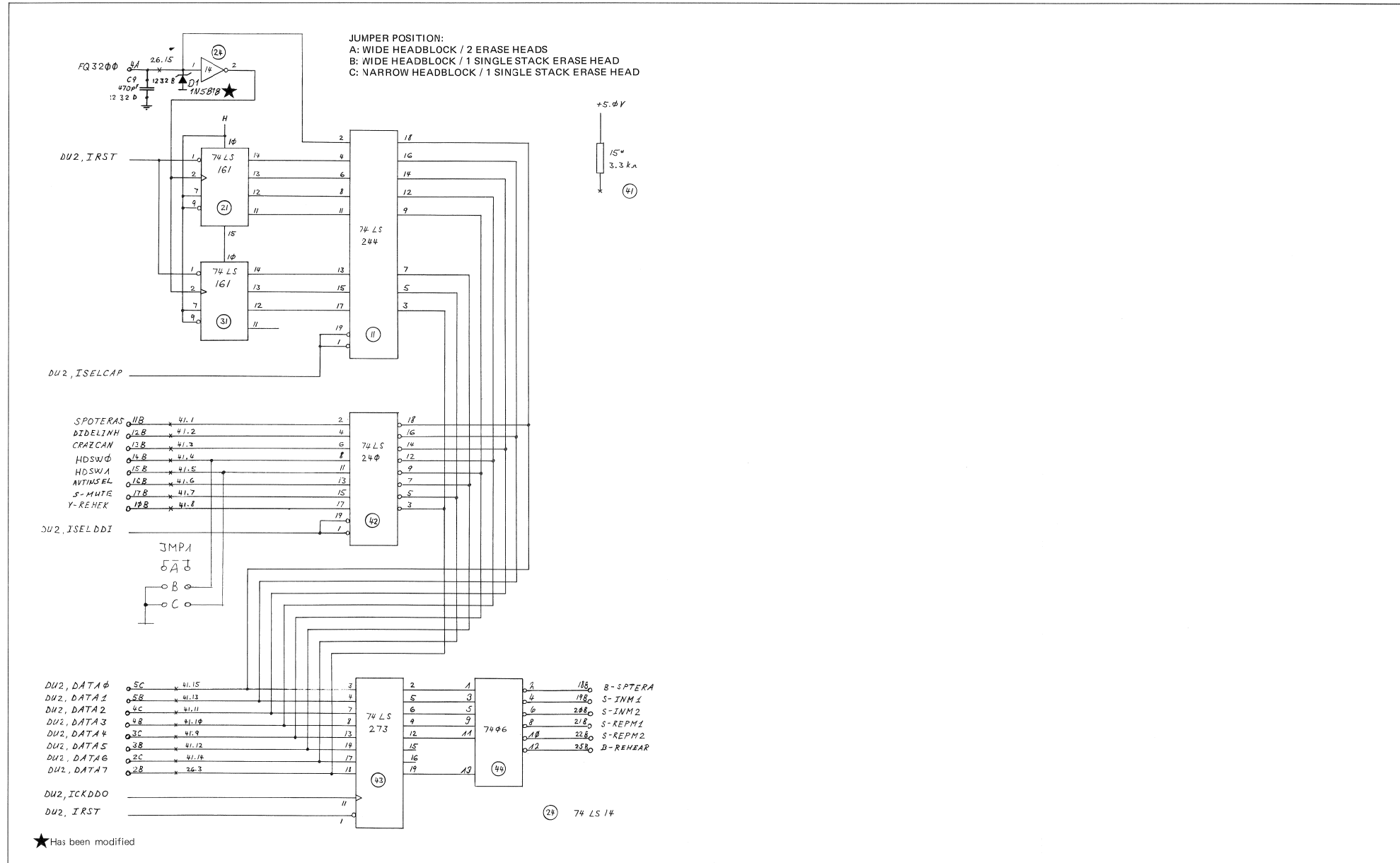


L1: 2 Ferrit-Perlen

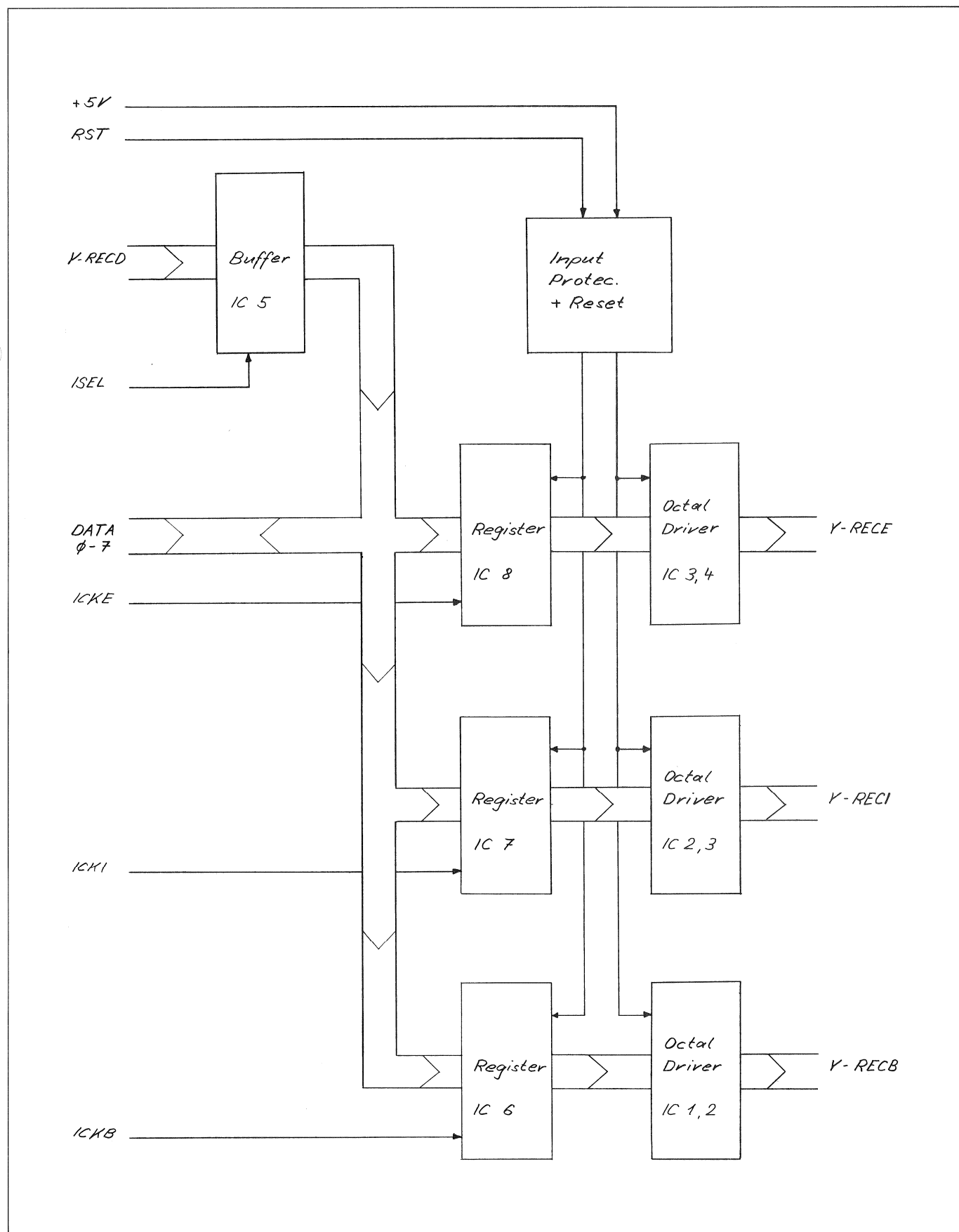


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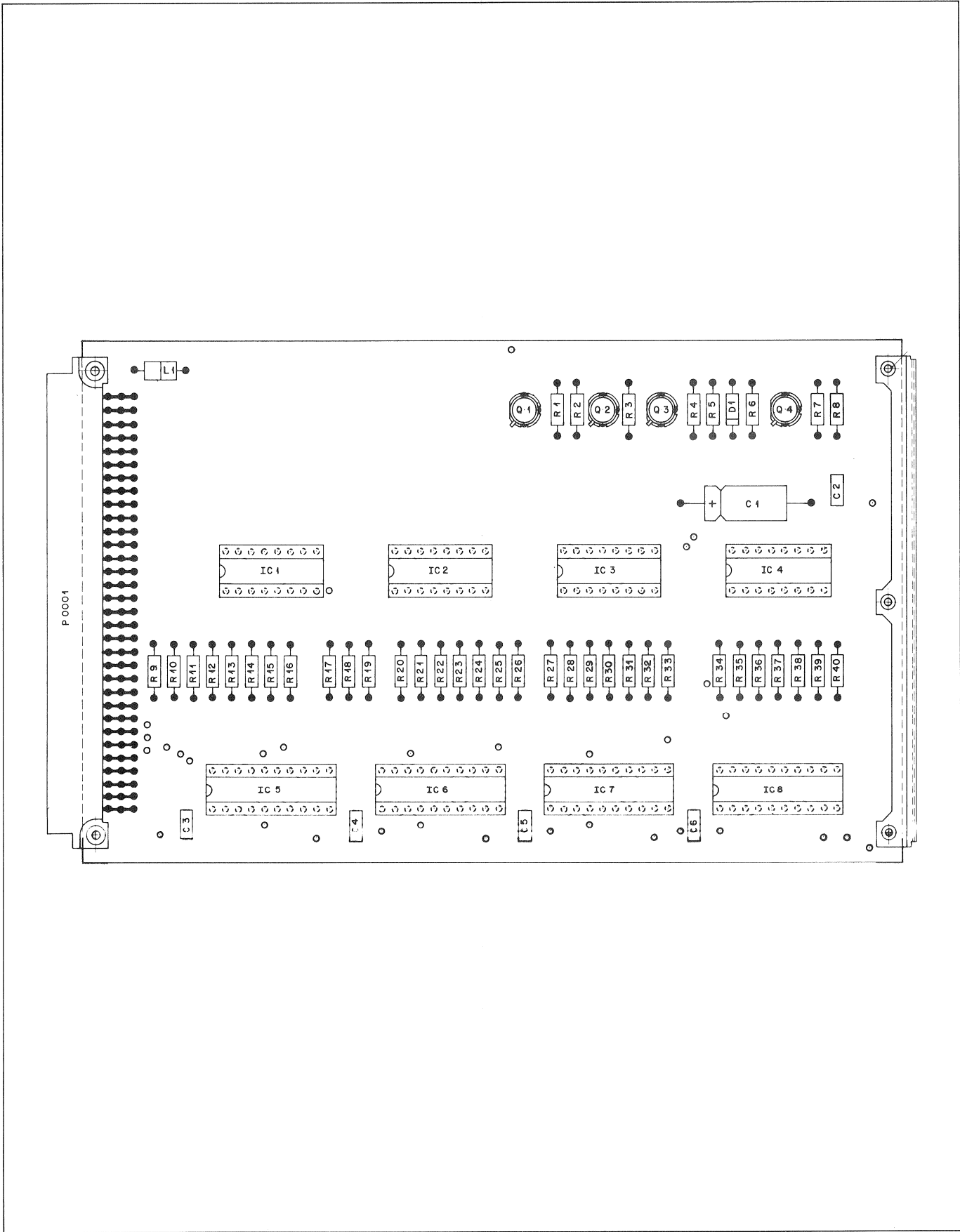
DELAY CONTROL PCB 1.180.551-00 GR40 EL11



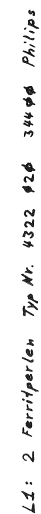
DELAY CONTROL REGISTER PCB 1.180.556 GR40 EL12/13/14



DELAY CONTROL REGISTER PCB 1.180.556 GR40 EL12/13/14



09.02.79



IND	POS NO	PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MFR
	C 01	59.25.3470	47 U	16V EL	
	C 02	59.99.0205	68 N	63V CER	
	C 03	59.99.0205	68 N		
	C 04	59.99.0205	68 N		
	C 05	59.99.0205	68 N		
	C 06	59.99.0205	68 N		
	D 01	50.04.1107	3,3 V	Z	
	IC 1	50.05.0229	CA3081	Q Array FM gen. Emitter	TI
	IC 2	50.05.0229	CA3081		RCA
	IC 3	50.05.0229	CA3081		
	IC 4	50.05.0229	CA3081		
	IC 5	50.06.0244	SN74LS244	N octal buffers/drivers	TI
	IC 6	50.06.0273	SN74LS273	N octal D-type flips-flops	RCA
	IC 7	50.06.0273	SN74LS273	N	
	IC 8	50.06.0273	SN74LS273	N	
	L 01	61.99.0124	34400	2 Permitt pearls #2,0	Ph
	P 01	54.01.0358	3 x 32	Plug	
	Q 01	50.03.0434	BFR 18	Ucp 85V NPN	SGS
	Q 02	50.03.0409	BC108B	NPN	
	Q 03	50.03.0409	BC108B		
	Q 04	50.03.0409	BC108B		

IND	DATE	NAME
④		TI = Texas Instr.
④		Ph = Philips
④		SGS = Ates
④		
④	9.2.79	Kurz/gv

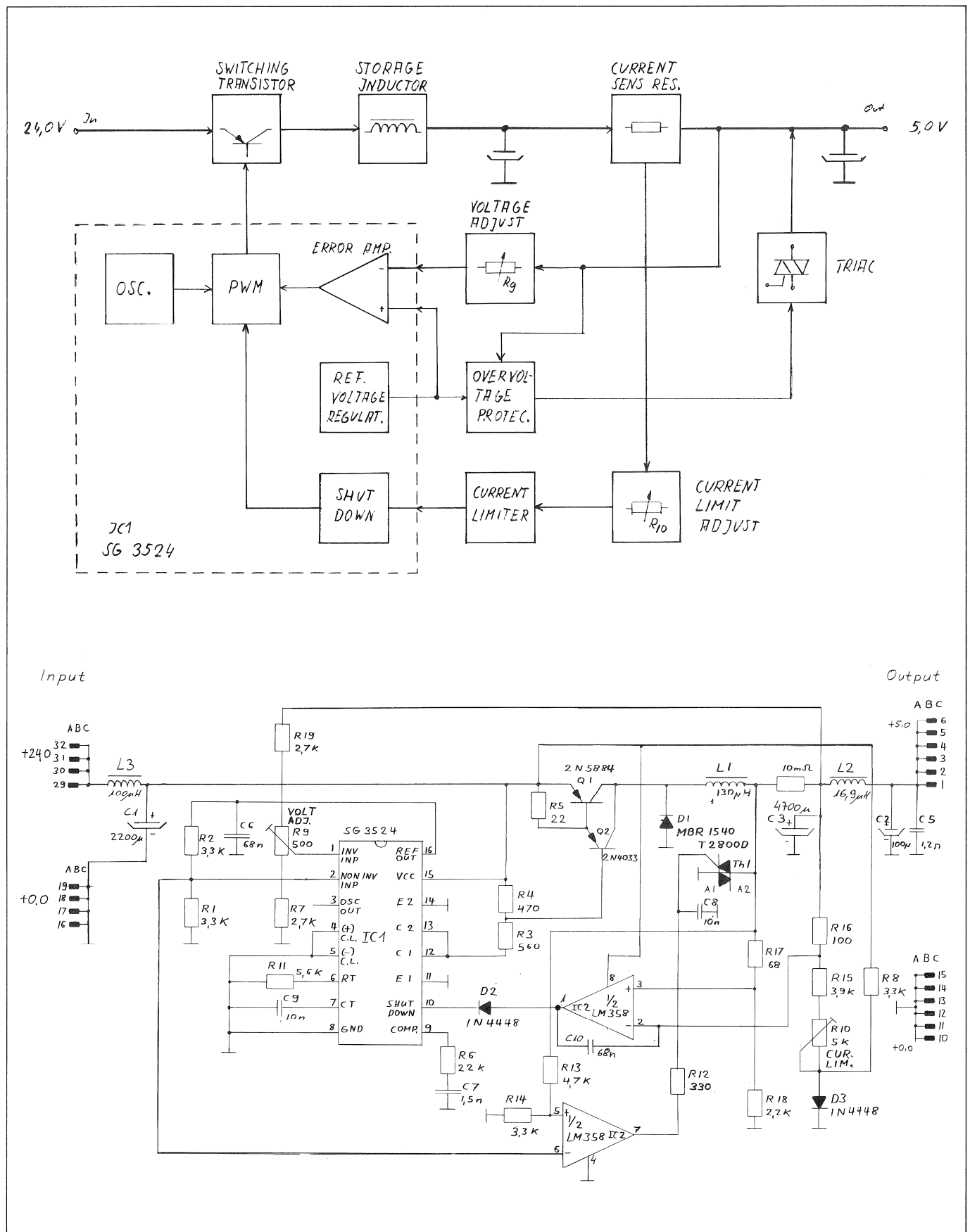
STUDER	Delay Control-Register Card	1.180.556	PAGE 1 OF 3
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IND	POS NO	PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MFR
	R 01	57.11.4472	1 k	5% .25W CF	
	R 02	57.11.4471	470		
	R 03	57.11.4462	6,8 k		
	R 04	57.11.4332	3,3 k		
	R 05	57.11.4102	1 k		
	R 06	57.11.4821	820		
	R 07	57.11.4472	4,7 k		
	R 08	57.11.4332	3,3 k		
	R 09	57.11.4332	3,3 k		
	R 10	57.11.4332	3,3 k		
	R 11	57.11.4332	3,3 k		
	R 12	57.11.4332	3,3 k		
	R 13	57.11.4332	3,3 k		
	R 14	57.11.4332	3,3 k		
	R 15	57.11.4332	3,3 k		
	R 16	57.11.4332	3,3 k		
	R 17	57.11.4472	4,7 k		
	R 18	57.11.4472	4,7 k		
	R 19	57.11.4472	4,7 k		
	R 20	57.11.4472	4,7 k		
	R 21	57.11.4472	4,7 k		
	R 22	57.11.4472	4,7 k		
	R 23	57.11.4472	4,7 k		
	R 24	57.11.4472	4,7 k		
	R 25	57.11.4472	4,7 k		
	R 26	57.11.4472	4,7 k		
	R 27	57.11.4472	4,7 k		
	R 28	57.11.4472	4,7 k		
	R 29	57.11.4472	4,7 k		
	R 30	57.11.4472	4,7 k		

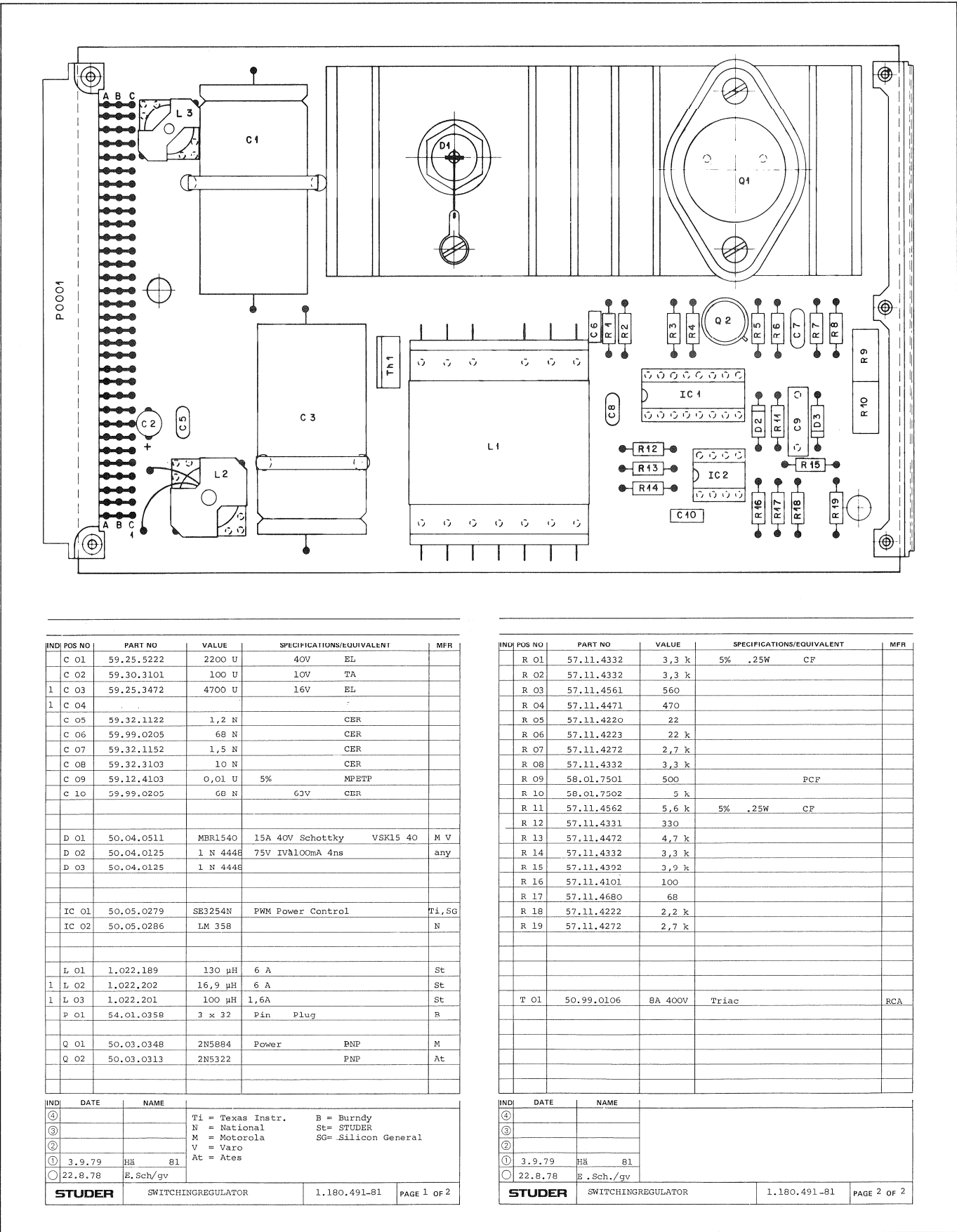
IND	DATE	NAME
④		
④		
④		
④		
④	9.2.79	Kurz/gv

STUDER	Delay Control-Register Card	1.180.556	PAGE 2 OF 3
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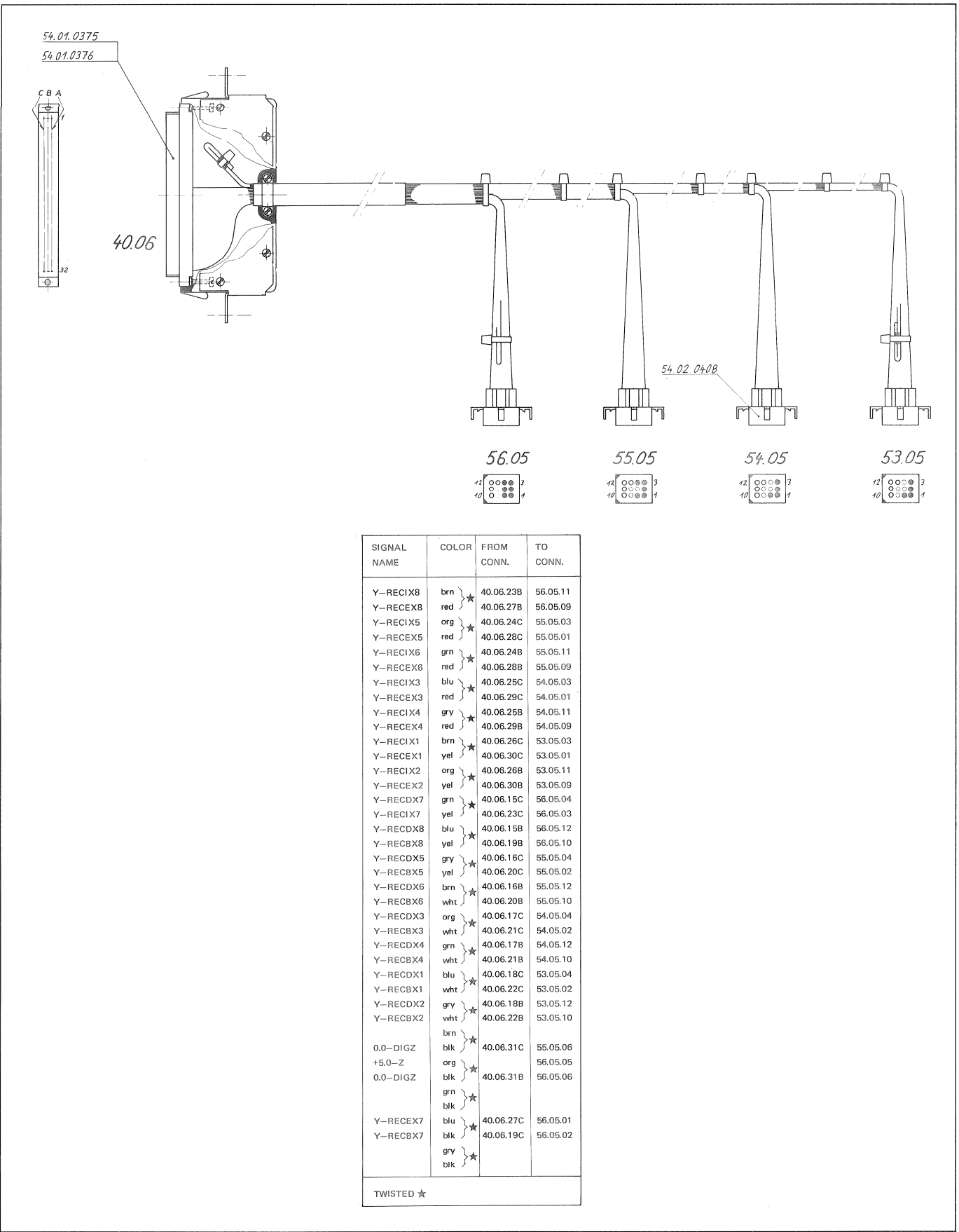
SWITCHING REGULATOR PCB 1.180.491-81 GR40 EL15



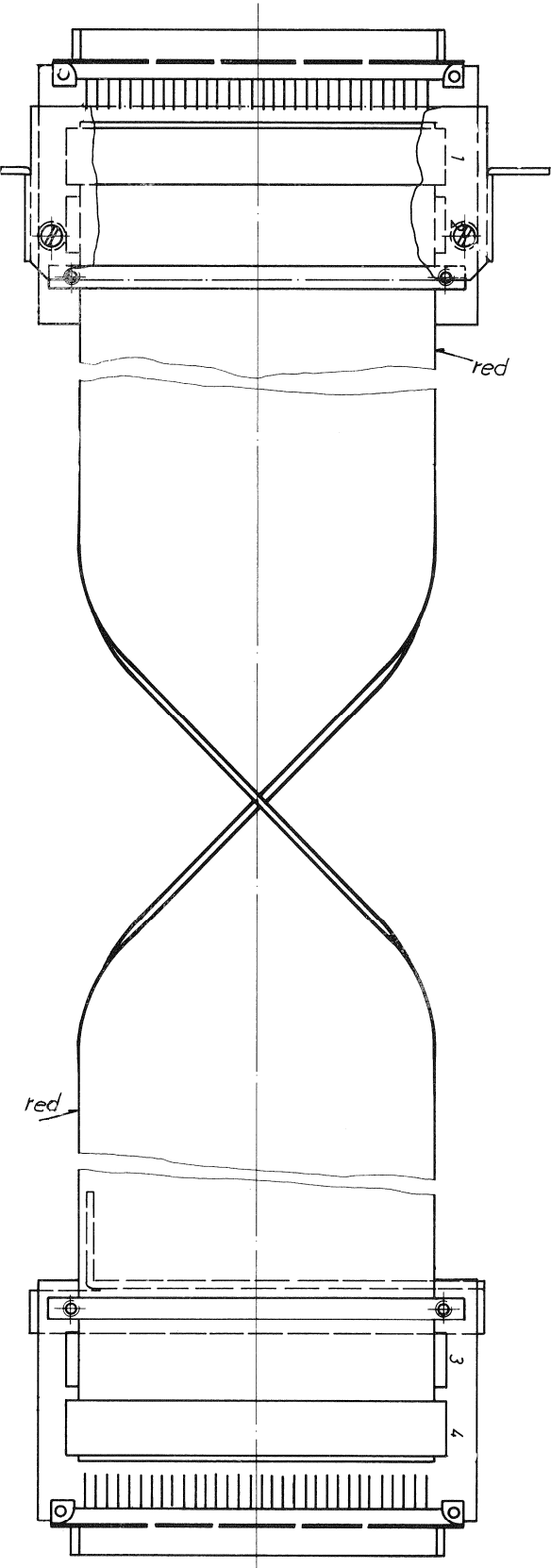
SWITCHING REGULATOR PCB 1.180.491-81 GR40 EL15



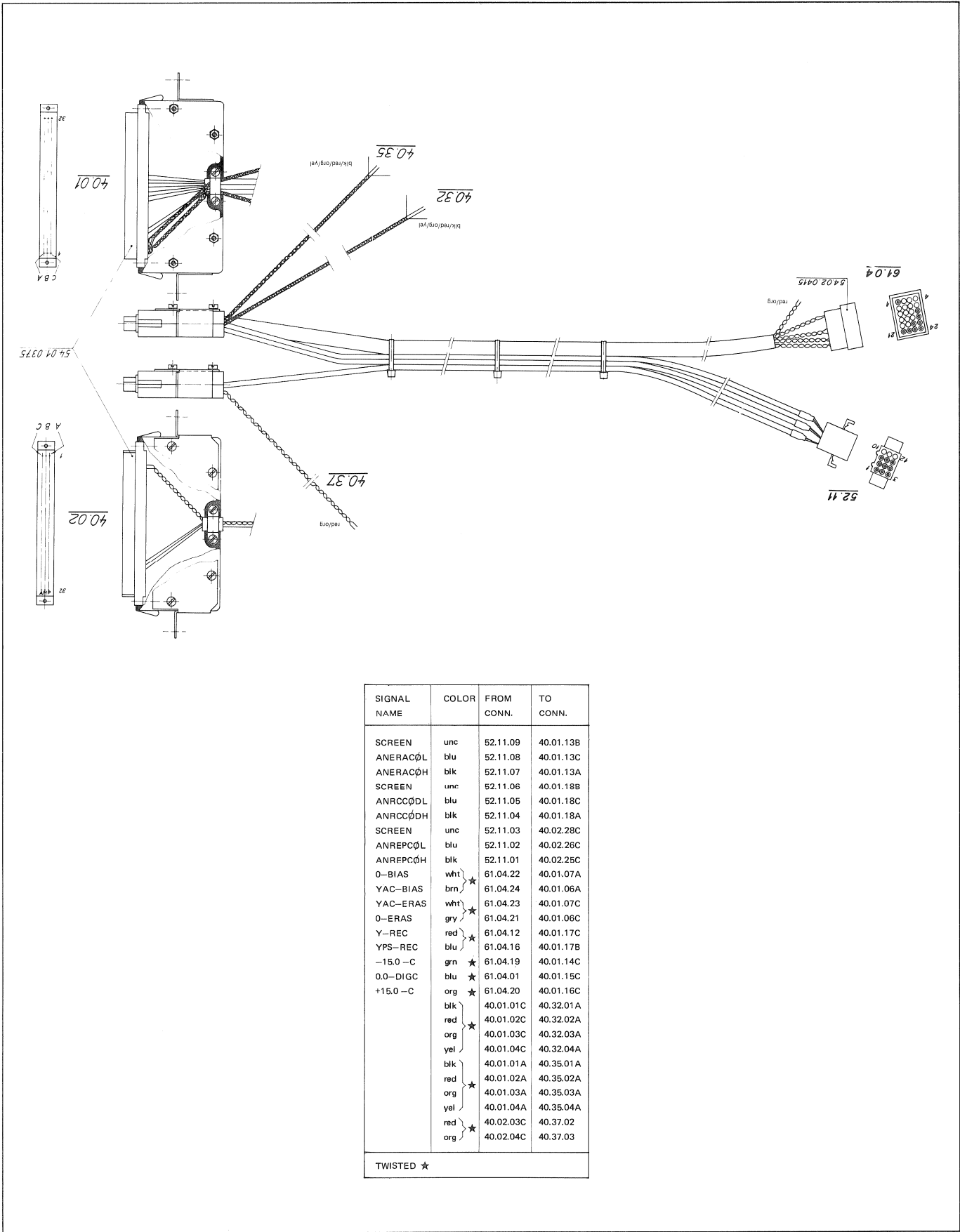
WIRE HARNESS / AUDIO DELAY UNIT 1.180.527



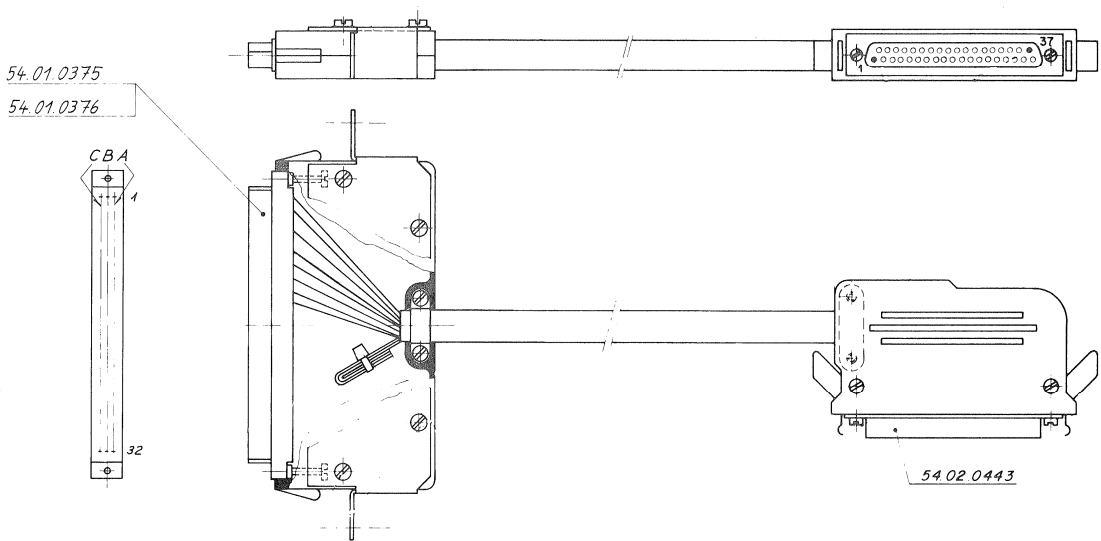
BUS INTERCONNECTION CABLE 1.180.421



HEAD PLUG TLS CABLE 1.180.607



MASTER PANEL TLS CABLE 1.180.608

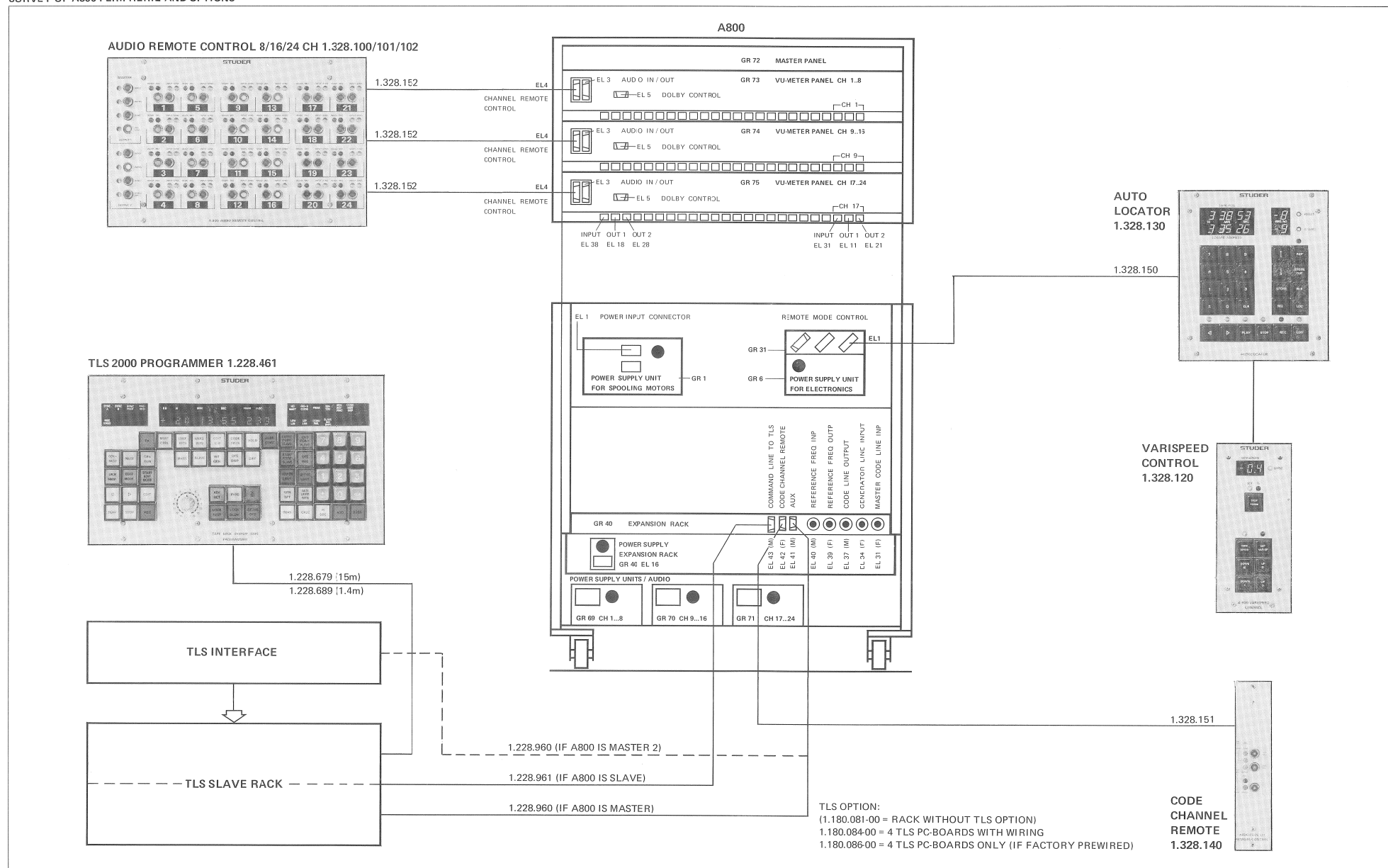


SIGNAL NAME	COLOR	CONNECTOR 54.01.0375/76	CONNECTOR 54.02.0443
O-LTLS	wht } ★	08B	2
B-READY	blu }	02A	4
O-LTLS	wht }	09B	20
O-LTLS	org } ★	11A	21
O-RTLS	wht }	10A	14
+10 TLS	grn }	07B	13
+10 TLS	wht }	08A	36
+24 OTLS	brn } ★	09A	32
B-REPRO	wht }	03A	5
B-SCODE	gry }	04A	6
CCHRDYTD	red }	05A	15
B-INPUT	blu }	06A	17
B-RECORD	red }	07A	23
CCHONTD	org }	02B	24
CCHREMTD	red }	03B	25
—	grn }	—	—
CCHSYNCTD	red }	04B	33
CCHINPTD	brn }	05B	34
B-SYNC	red }	06B	35
	gry }		
TWISTED ★			

CONTENTS / PERIPHERY AND OPTIONS

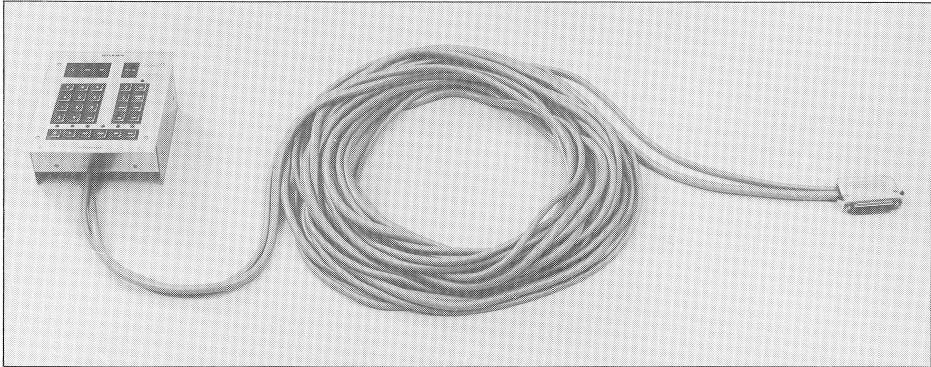
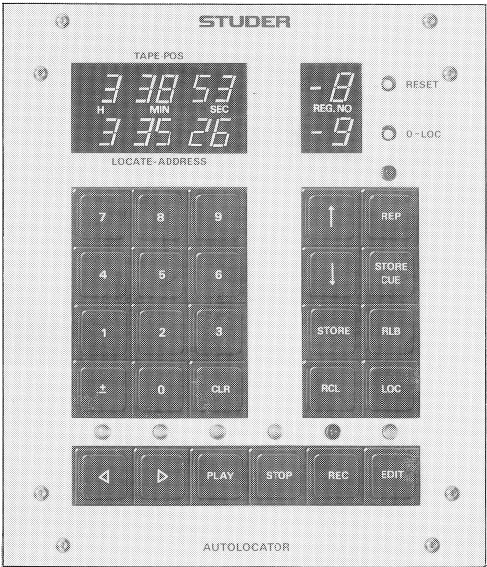
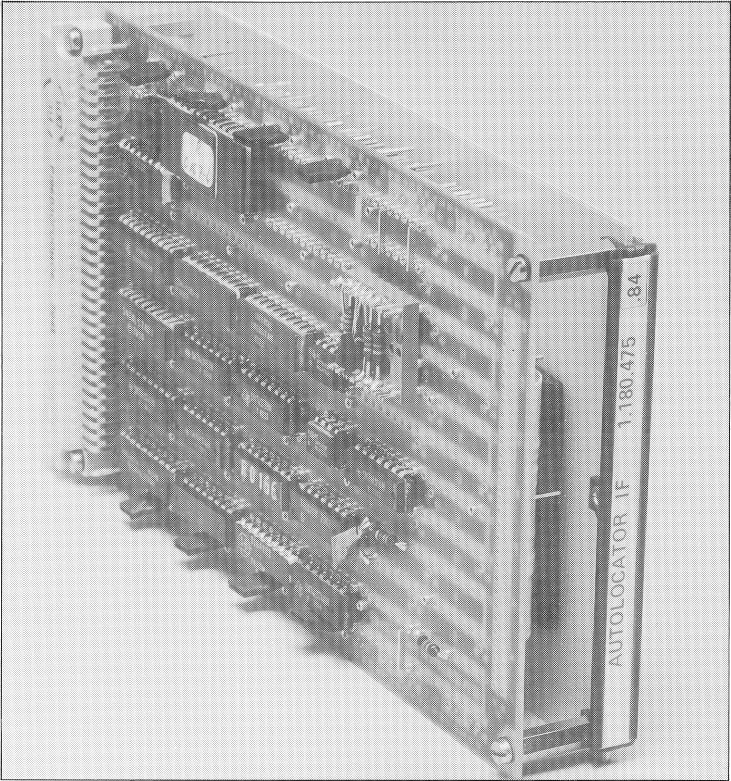
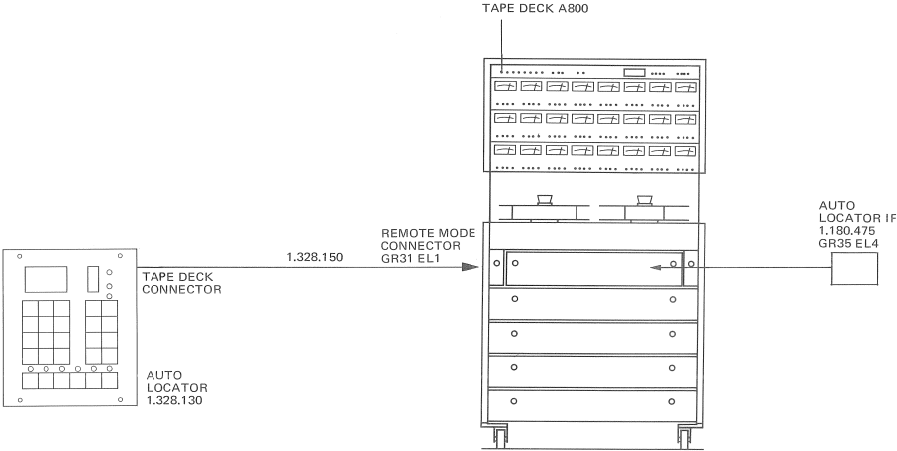
DESCRIPTIONS	SCHEMATIC NR.	SECTION/PAGE
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SURVEY OF A800 PERIPHERIE AND OPTIONS

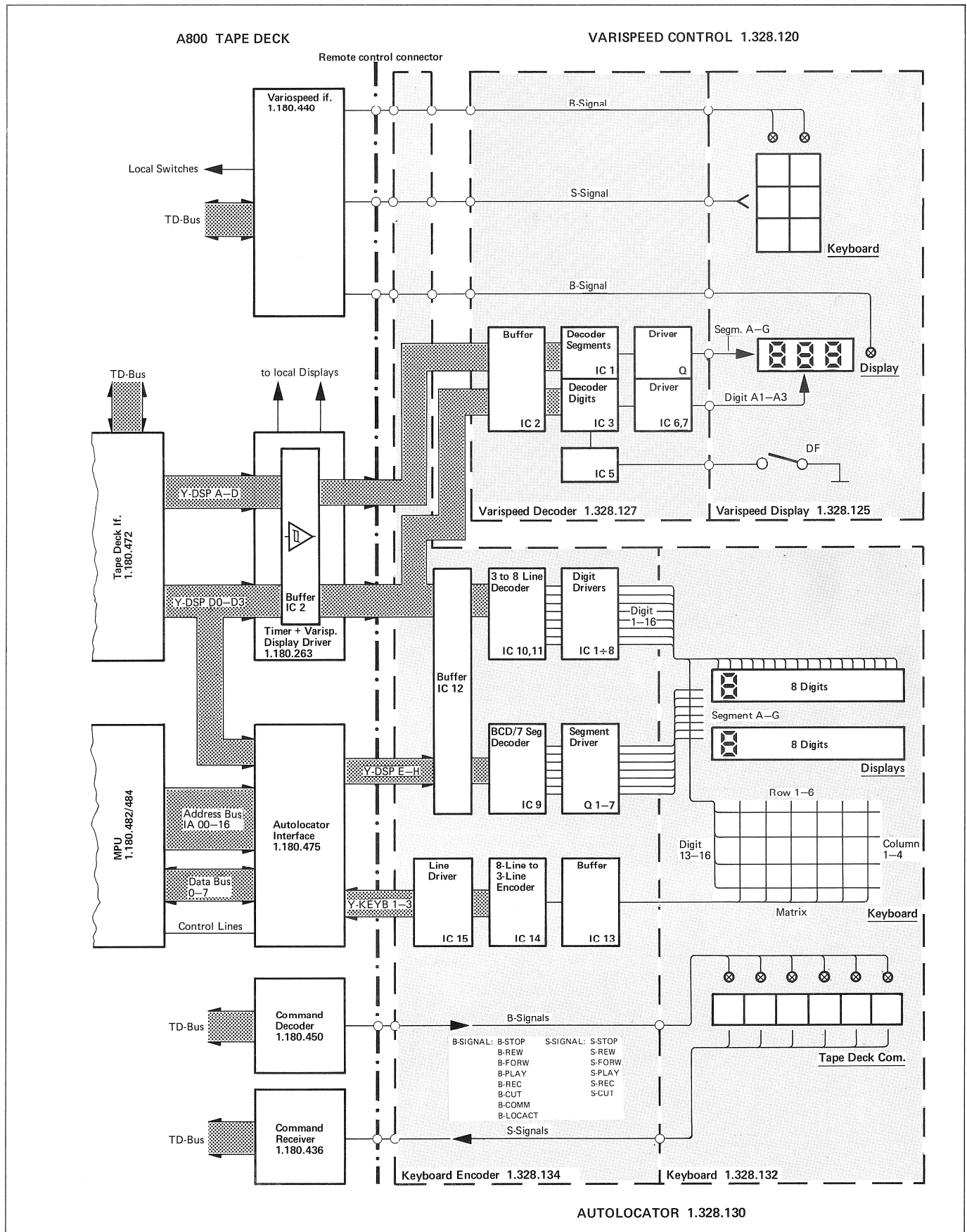


AUTOLOCATOR WIRING

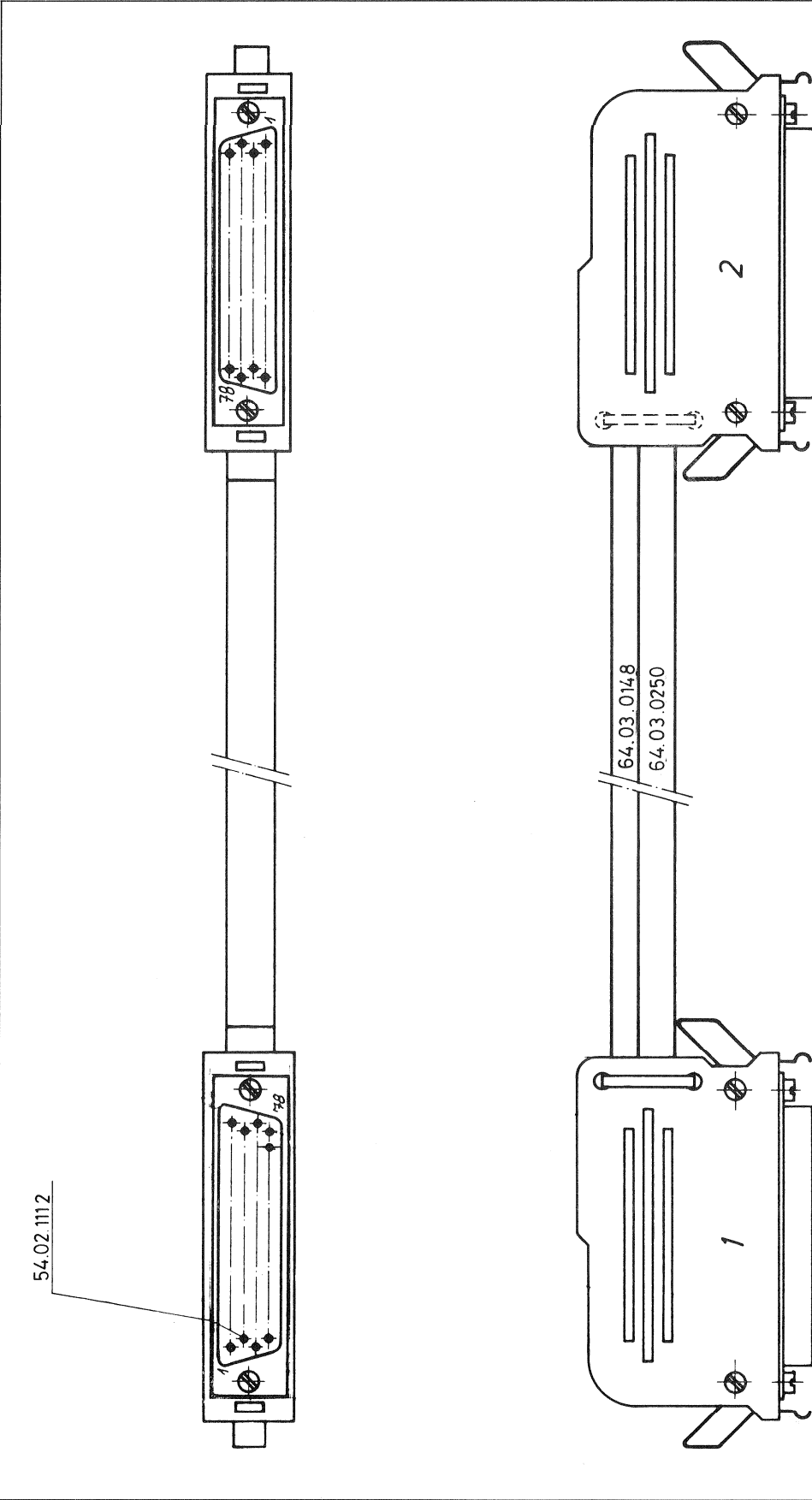
SCHEMATICS SEE SEPARATE AUTOLOCATOR MANUAL



AUTOLOCATOR SIGNAL FOLLOW



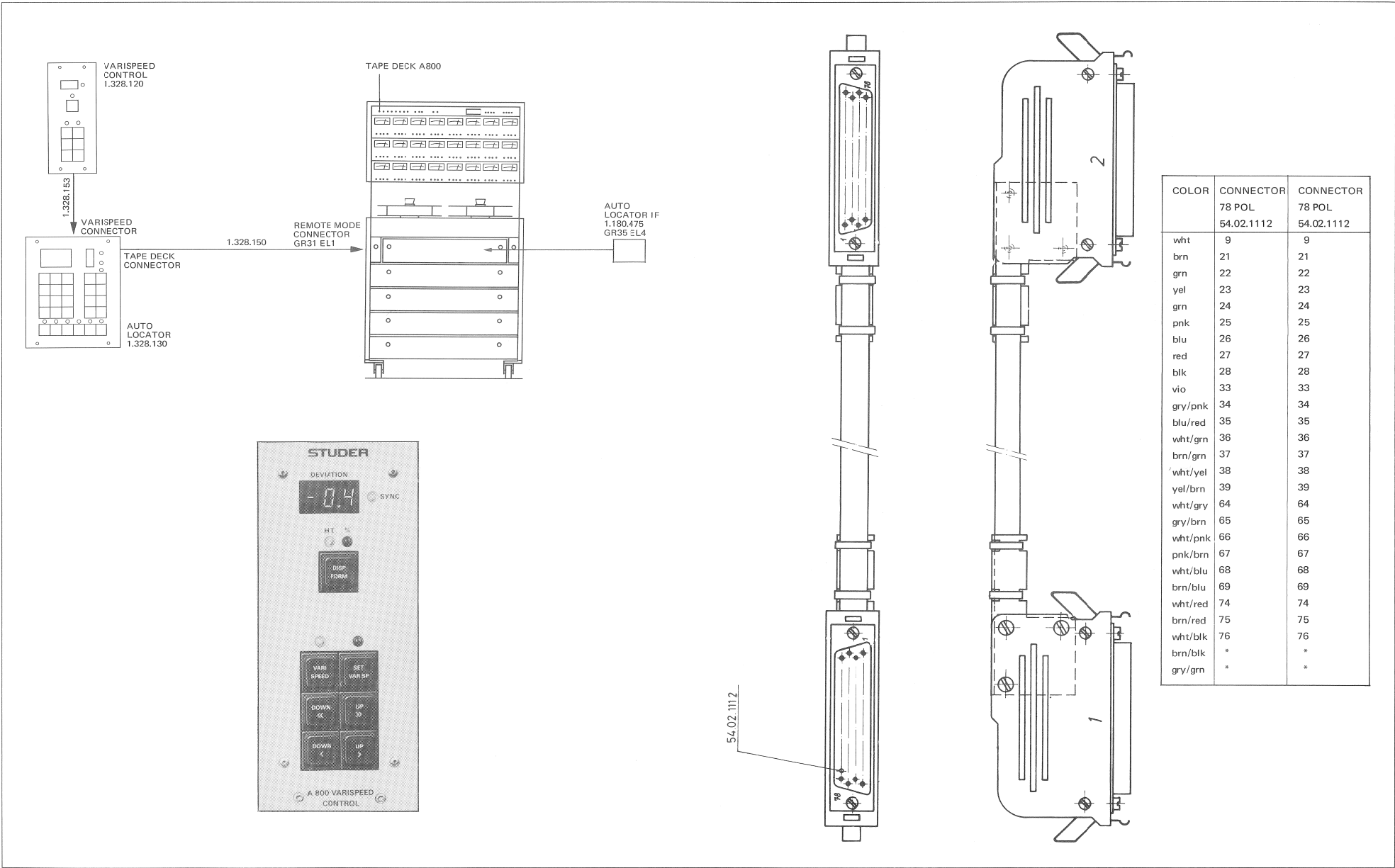
AUTOLOCATOR CABLE (15m) 1.328.150



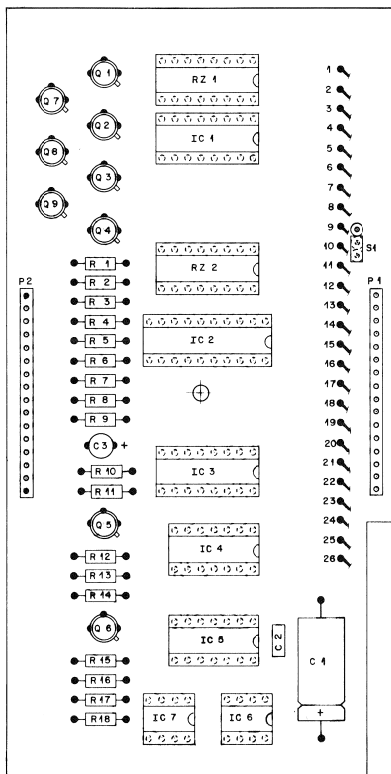
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wht	1	1
brn	3	3
grn	4	4
yel	5	5
gry	6	6
pnk	7	7
blu	8	8
red	9	9
blk	10	10
vio	11	11
gry/pnk	12	12
blu/red	13	13
wht/grn	14	14
brn/grn	15	15
wht/yel	16	16
yel/brn	17	17
wht/gry	18	18
gry/brn	19	19
wht/pnk	20	20
pnk/brn	33	33
wht/blu	34	34
brn/blu	35	35
wht/red	36	36
brn/red	37	37
wht/blk	38	38
brn/blk	39	39
gry/grn	*	*
wht	21	21
brn	22	22
grn	23	23
yel	24	24
gry	25	25
pnk	26	26
blu	27	27
red	28	28
blk	29	29
vio	30	30
gry/pnk	31	31
blu/red	32	32
wht/grn	40	40
brn/grn	41	41
wht/yel	42	42
yel/brn	43	43
wht/gry	44	44
gry/brn	45	45
wht/pnk	46	46
pnk/brn	47	47
wht/blu	48	48
brn/blu	49	49
wht/red	50	50
brn/red	51	51
wht/blk	52	52
brn/blk	53	53
gry/grn	54	54
yel/gry	55	55
pnk/grn	56	56
yel/pnk	57	57
grn/blu	58	58
yel/blu	59	59
grn/red	60	60
yel/red	61	61
grn/blk	62	62
yel/blk	63	63
gry/blu	64	64
pnk/blu	65	65
gry/red	66	66
pnk/red	67	67
gry/blk	68	68
pnk/blk	69	69
blu/blk	70	70
red/blk	71	71
wht/brn/blk	72	72
yel/grn/blk	73	73
gry/pnk/blk	74	74
blu/red/blk	75	75
wht/grn/blk	76	76
grn/brn/blk	77	77
wht/yel/blk	*	*
yel/brn/blk	*	*

VARISPEED WIRING

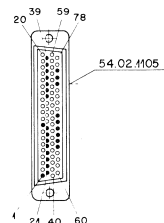
VARISPEED CABLE (0.8m) 1.328.153



VARISPEED DECODER PCB 1.328.127



PT	SIGNAL	COL	PRINT CON.
1	+0.0V	wh	1
2	KEY		
3	REM-ENB	grn	19
21	Y-DSP-A	brn	5
22	Y-DSP-B	red	6
23	Y-DSP-C	org	7
24	Y-DSP-D	yel	8
25	Y-DSP-DB	grn	9
26	Y-DSP-D1	blu	10
27	Y-DSP-D2	vio	11
28	Y-DSP-D3	gry	12
33	+5.0V	grn	23
34	+5.0V	grn	24
35	+5.0V	grn	25
36	+0.0V	blk	2
37	+0.0V	blk	3
38	+0.0V	blk	4
39	+5.0V	grn	23
64	S-DWNSLW	yel	43
65	S-DWNPST	grn	44
66	S-UPSLW	blu	45
67	S-UPFST	vio	46
68	S-SETV SP	gry	47
69	S-VARISP	wht	48
74	B-SETV SP	grn	20
75	B-VARISP	blu	21
76	B-SYNC	vio	22
78	KEY		



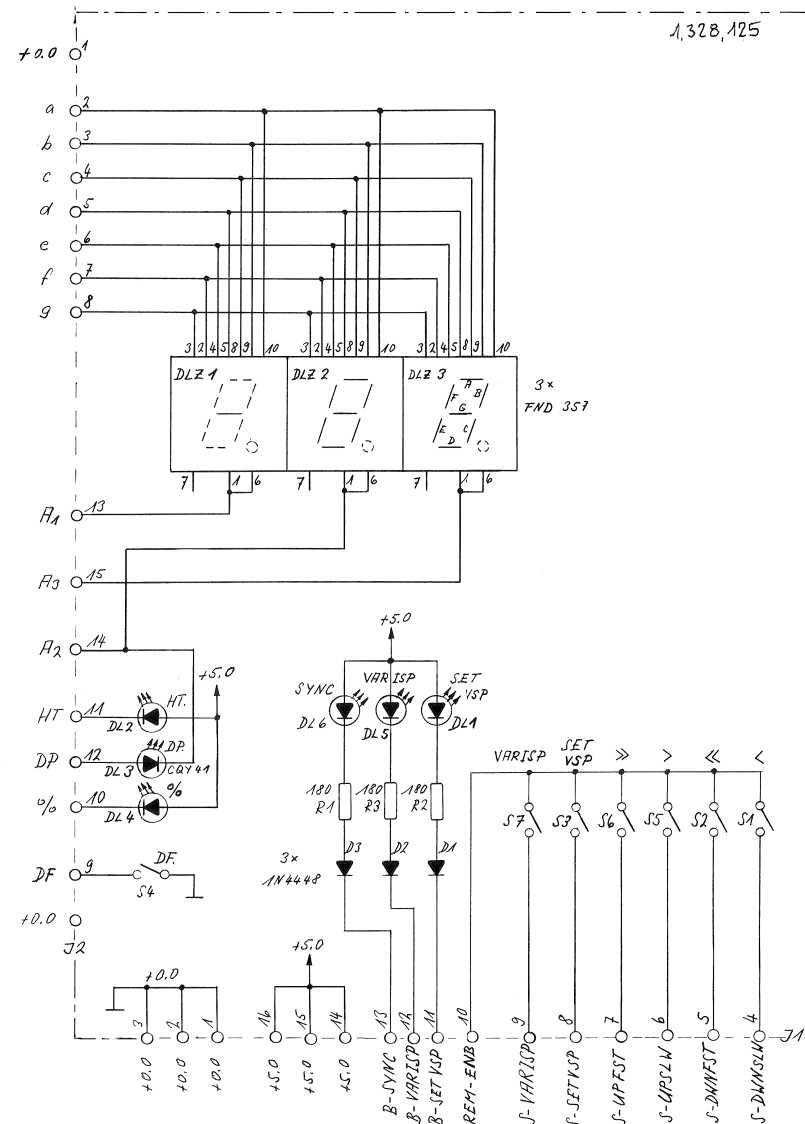
IND	POS NO	PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MFR
	C1	53.25.4474	470pF	EN6 6V	
	C2	53.29.0505	50pF	6u 63V	
	C3	53.26.4118	10pF	7u 25V	
	R21	57.07.3111	8x2.1kΩ	2%, 0.125W	ALB
	R22	57.07.3102	8x1kΩ	2%, 0.125W	ALB
	IC1	1.A80.046.90	8.046.90	FROM Display Decoder 7dig.	ALB
	IC2	50.06.0240	50.06.0240	Output buffers/drivers 3-3hole	20Pin TI
	IC3	50.06.0456	50.06.0456	Dual A-A-B Decoder	ALB
	IC4	50.06.0433	50.06.0433	4-Input Schmitt Trigger NAND	ALB
	IC5	50.06.0874	50.06.0874	Dual B-Flip Flop	ALB
	IC6	50.05.0203	50.05.0203	2-Input Tri-Buffer OR	2Pin TI
	IC7		50.05.0203		2Pin TI
	P1	54.01.0024	9 16Pin	30mm	
	P2		2 16Pin	30mm	
	Q1	50.03.0206	2C 11P 2	70 M	
	Q2	"	"	"	
	Q3	"	"	"	
	Q4	"	"	"	
	Q5	50.03.0478	2C 11P 2	NH	
	Q6	50.03.0206	2C 11P 2	PH	
	Q7	"	"	"	
	Q8	"	"	"	
	P1	57.11.4100	10kΩ	5%, 0.125W	
	P2	"	"	"	
	P3	"	"	"	

IND	DATE	NAME
1	1.3.79	H. Kue
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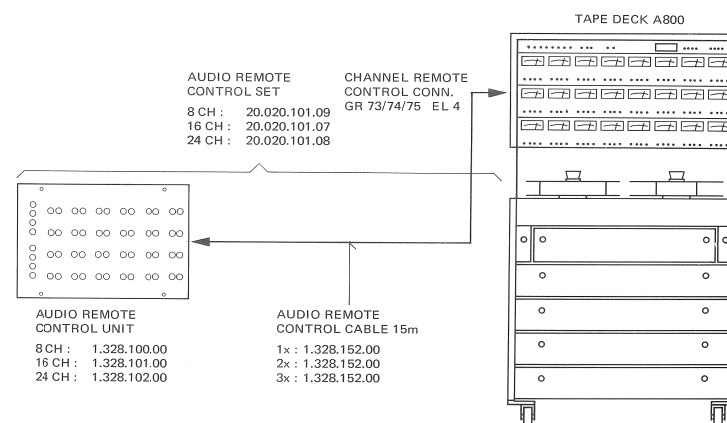
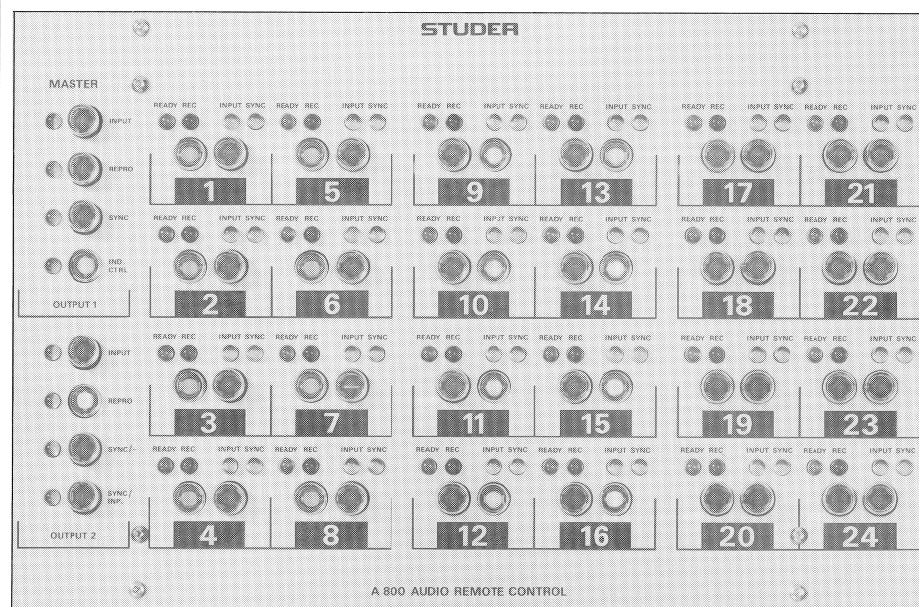
IND	POS NO	PART NO	VALUE	SPECIFICATIONS/EQUIVALENT	MFR
	R1	57.11.4100	10kΩ	5%, 0.125W	
	R2	"	"	"	
	R3	"	"	"	
	R4	"	"	"	
	P1	57.11.4100	10kΩ	5%, 0.125W	
	P2	57.11.4100	10kΩ	5%, 0.125W	
	P3	57.11.4100	10kΩ	5%, 0.125W	
	P4	57.11.4100	10kΩ	5%, 0.125W	
	P5	57.11.4100	10kΩ	5%, 0.125W	
	P6	57.11.4100	10kΩ	5%, 0.125W	
	P7	57.11.4100	10kΩ	5%, 0.125W	
	P8	57.11.4100	10kΩ	5%, 0.125W	
	P9	57.11.4100	10kΩ	5%, 0.125W	
	P10	57.11.4100	10kΩ	5%, 0.125W	
	P11	57.11.4100	10kΩ	5%, 0.125W	
	P12	57.11.4100	10kΩ	5%, 0.125W	
	P13	57.11.4100	10kΩ	5%, 0.125W	
	P14	57.11.4100	10kΩ	5%, 0.125W	
	P15	57.11.4100	10kΩ	5%, 0.125W	
	P16	57.11.4100	10kΩ	5%, 0.125W	
	P17	57.11.4100	10kΩ	5%, 0.125W	
	P18	57.11.4100	10kΩ	5%, 0.125W	
	P19	57.11.4100	10kΩ	5%, 0.125W	
	P20	57.11.4100	10kΩ	5%, 0.125W	
	P21	57.11.4100	10kΩ	5%, 0.125W	
	P22	57.11.4100	10kΩ	5%, 0.125W	
	P23	57.11.4100	10kΩ	5%, 0.125W	
	P24	57.11.4100	10kΩ	5%, 0.125W	
	P25	57.11.4100	10kΩ	5%, 0.125W	
	P26	57.11.4100	10kΩ	5%, 0.125W	
	P27	57.11.4100	10kΩ	5%, 0.125W	
	P28	57.11.4100	10kΩ	5%, 0.125W	
	P29	57.11.4100	10kΩ	5%, 0.125W	
	P30	57.11.4100	10kΩ	5%, 0.125W	
	P31	57.11.4100	10kΩ	5%, 0.125W	
	P32	57.11.4100	10kΩ	5%, 0.125W	
	P33	57.11.4100	10kΩ	5%, 0.125W	
	P34	57.11.4100	10kΩ	5%, 0.125W	
	P35	57.11.4100	10kΩ	5%, 0.125W	
	P36	57.11.4100	10kΩ	5%, 0.125W	
	P37	57.11.4100	10kΩ	5%, 0.125W	
	P38	57.11.4100	10kΩ	5%, 0.125W	
	P39	57.11.4100	10kΩ	5%, 0.125W	
	P40	57.11.4100	10kΩ	5%, 0.125W	
	P41	57.11.4100	10kΩ	5%, 0.125W	
	P42	57.11.4100	10kΩ	5%, 0.125W	
	P43	57.11.4100	10kΩ	5%, 0.125W	
	P44	57.11.4100	10kΩ	5%, 0.125W	
	P45	57.11.4100	10kΩ	5%, 0.125W	
	P46	57.11.4100	10kΩ	5%, 0.125W	
	P47	57.11.4100	10kΩ	5%, 0.125W	
	P48	57.11.4100	10kΩ	5%, 0.125W	
	P49	57.11.4100	10kΩ	5%, 0.125W	
	P50	57.11.4100	10kΩ	5%, 0.125W	
	P51	57.11.4100	10kΩ	5%, 0.125W	
	P52	57.11.4100	10kΩ	5%, 0.125W	
	P53	57.11.4100	10kΩ	5%, 0.125W	
	P54	57.11.4100	10kΩ	5%, 0.125W	
	P55	57.11.4100	10kΩ	5%, 0.125W	
	P56	57.11.4100	10kΩ	5%, 0.125W	
	P57	57.11.4100	10kΩ	5%, 0.125W	
	P58	57.11.4100	10kΩ	5%, 0.125W	
	P59	57.11.4100	10kΩ	5%, 0.125W	
	P60	57.11.4100	10kΩ	5%, 0.125W	
	P61	57.11.4100	10kΩ	5%, 0.125W	
	P62	57.11.4100	10kΩ	5%, 0.125W	
	P63	57.11.4100	10kΩ	5%, 0.125W	
	P64	57.11.4100	10kΩ	5%, 0.125W	
	P65	57.11.4100	10kΩ	5%, 0.125W	
	P66	57.11.4100	10kΩ	5%, 0.125W	
	P67	57.11.4100	10kΩ	5%, 0.125W	
	P68	57.11.4100	10kΩ	5%, 0.125W	
	P69	57.11.4100	10kΩ	5%, 0.125W	
	P70	57.11.4100	10kΩ	5%, 0.125W	
	P71	57.11.4100	10kΩ	5%, 0.125W	
	P72	57.11.4100	10kΩ	5%, 0.125W	
	P73	57.11.4100	10kΩ	5%, 0.125W	
	P74	57.11.4100	10kΩ	5%, 0.125W	
	P75	57.11.4100	10kΩ	5%, 0.125W	
	P76	57.11.4100	10kΩ	5%, 0.125W	
	P77	57.11.4100	10kΩ	5%, 0.125W	
	P78	57.11.4100	10kΩ	5%, 0.125W	
	P79	57.11.4100	10kΩ	5%, 0.125W	
	P80	57.11.4100	10kΩ	5%, 0.125W	
	P81	57.11.4100	10kΩ	5%, 0.125W	
	P82	57.11.4100	10kΩ	5%, 0.125W	
	P83	57.11.4100	10kΩ	5%, 0.125W	
	P84	57.11.4100	10kΩ	5%, 0.125W	
	P85	57.11.4100	10kΩ	5%, 0.125W	
	P86	57.11.4100	10kΩ	5%, 0.125W	
	P87	57.11.4100	10kΩ	5%, 0.125W	
	P88	57.11.4100	10kΩ	5%, 0.125W	
	P89	57.11.4100	10kΩ	5%, 0.125W	
	P90	57.11.4100	10kΩ	5%, 0.125W	
	P91	57.11.4100	10kΩ	5%, 0.125W	
	P92	57.11.4100	10kΩ	5%, 0.125W	
	P93	57.11.4100	10kΩ	5%, 0.125W	
	P94	57.11.4100	10kΩ	5%, 0.125W	
	P95	57.11.4100	10kΩ	5%, 0.125W	
	P96	57.11.4100	10kΩ	5%, 0.125W	
	P97	57.11.4100	10kΩ	5%, 0.125W	
	P98	57.11.4100	10kΩ	5%, 0.125W	
	P99	57.11.4100	10kΩ	5%, 0.125W	
	P100	57.11.4100	10kΩ	5%, 0.125W	

IND	DATE	NAME		
①				
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⑥	1.3.79	H. Kue		
STUDER	YARELSPEED	DECODED	132P. 101	PAGE 2 OF 2

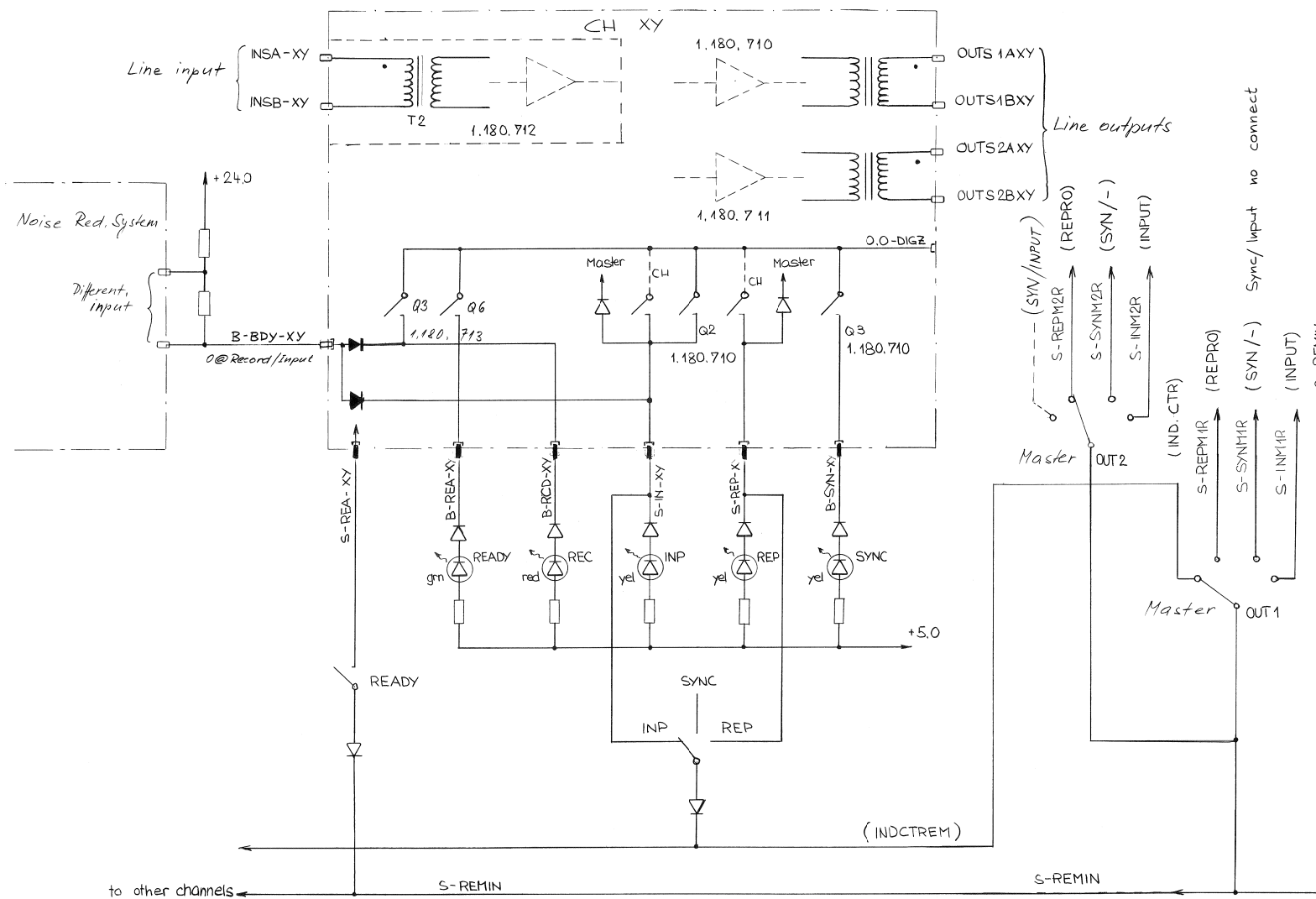
VARISPEED KEYBOARD 1.328.125



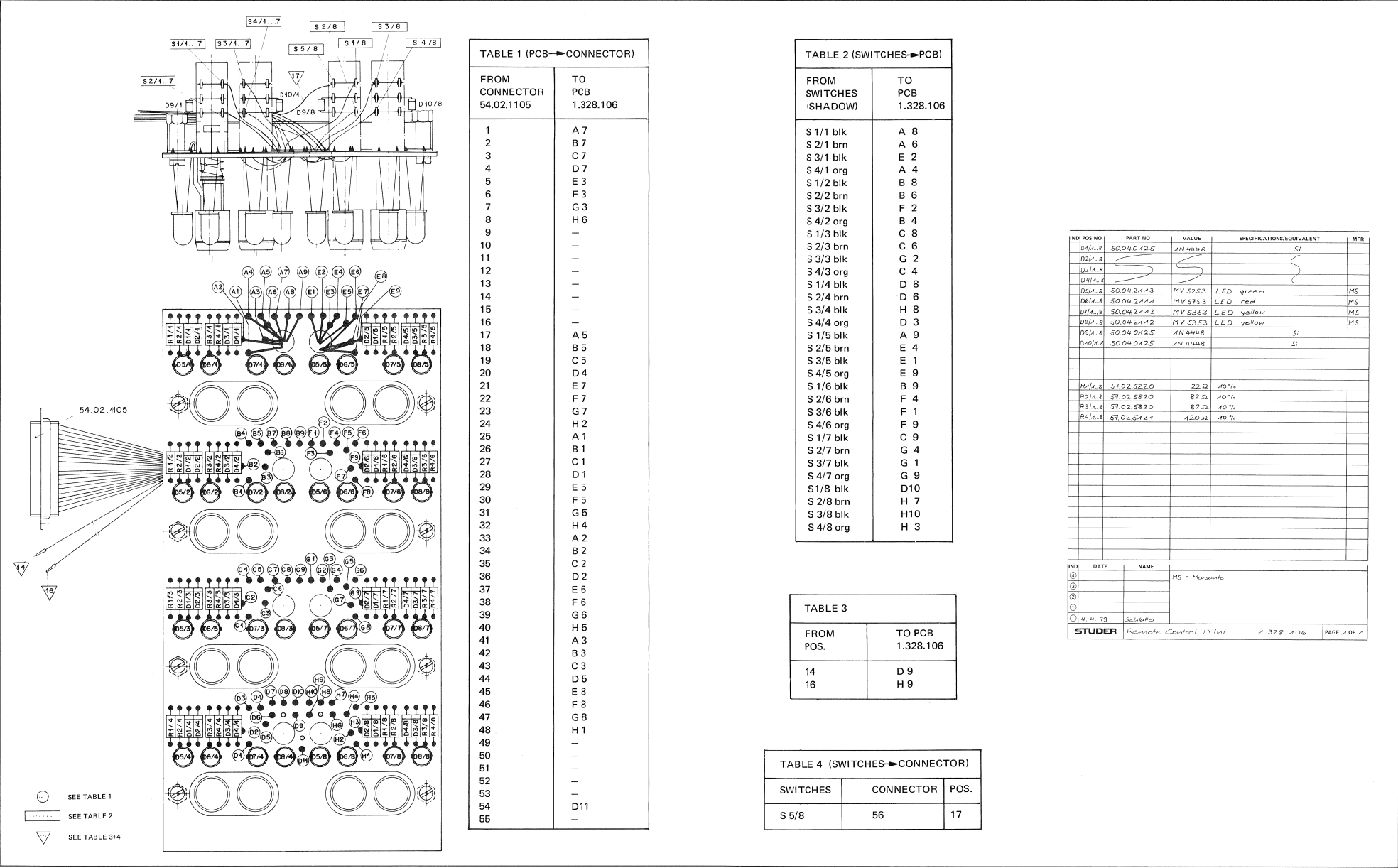
AUDIO REMOTE CONTROL WIRING



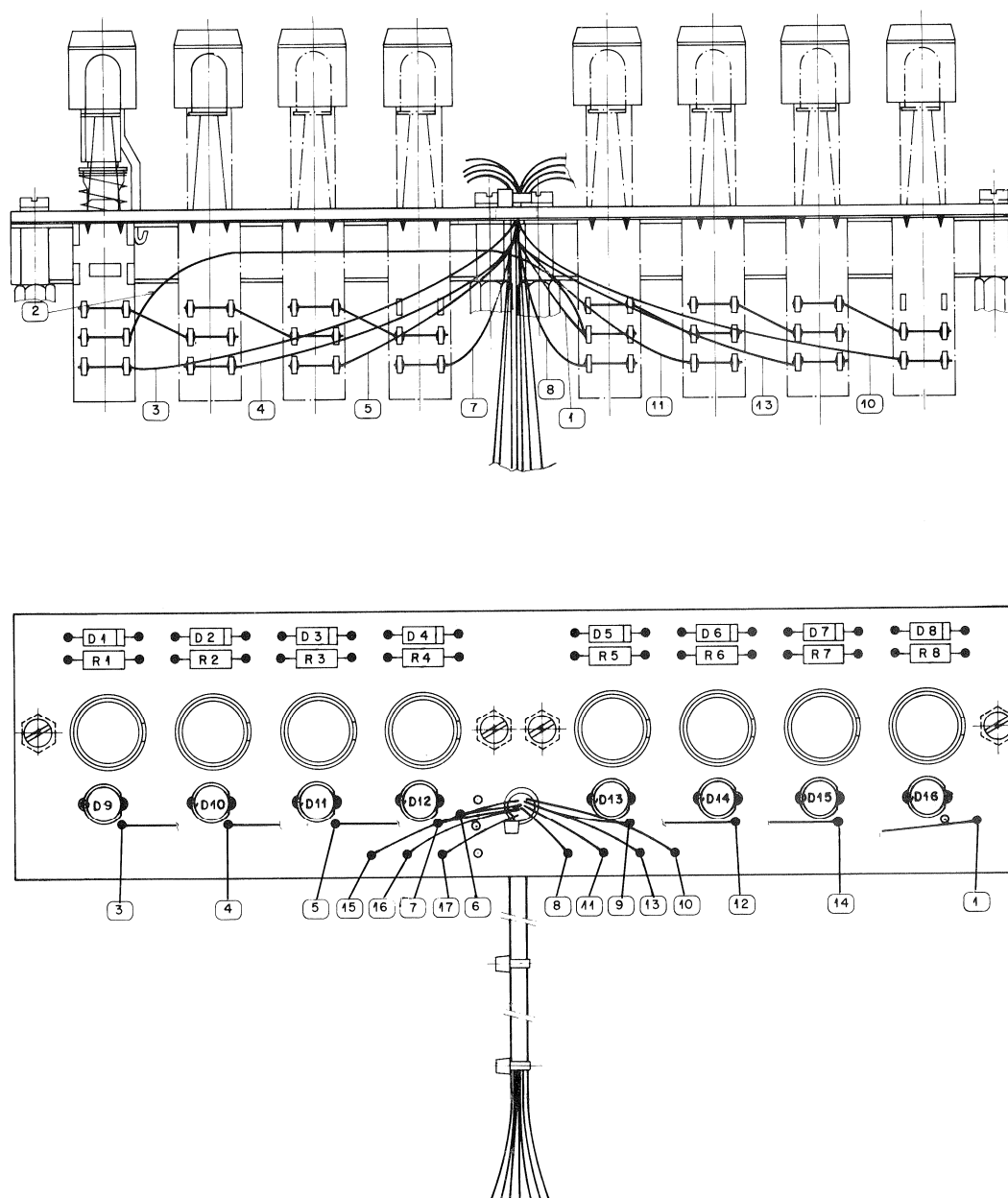
MEANING OF AUDIO REMOTE CONTROL SIGNALS



AUDIO REMOTE CONTROL UNIT 8/16/24 CH 1.328.100/101/102 (REMOTE CONTROL PCB 1.328.106)



AUDIO REMOTE CONTROL UNIT 8/16/24 CH 1.328.100/101/102 (MASTER PCB REMOTE CONTROL 1.328.107)

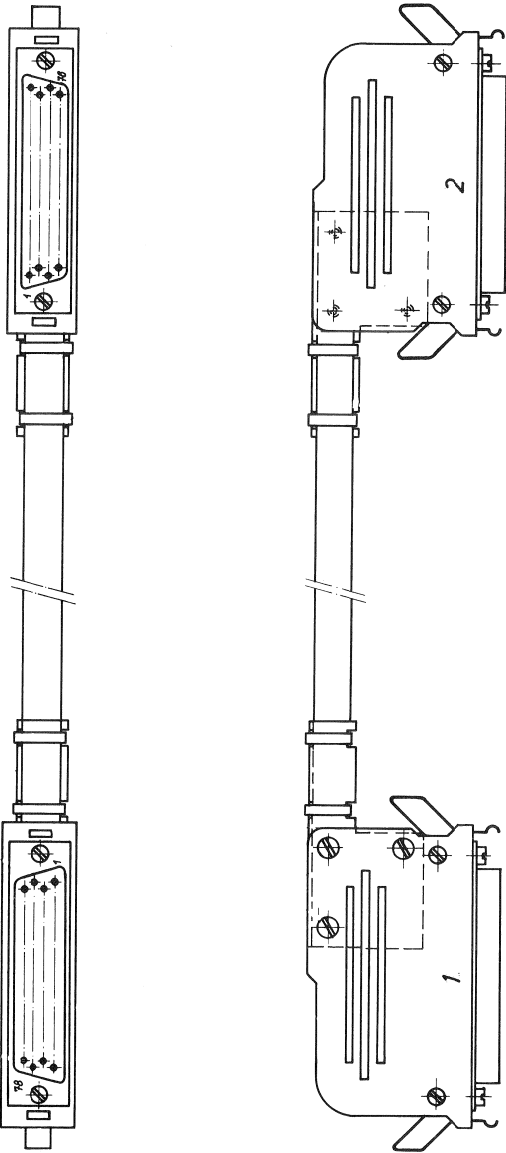


AUDIO REMOTE CONTROL UNIT 8/16/24 CH 1.328.100/101/102 (MASTER PCB REMOTE CONTROL 1.328.107)

14.11.77

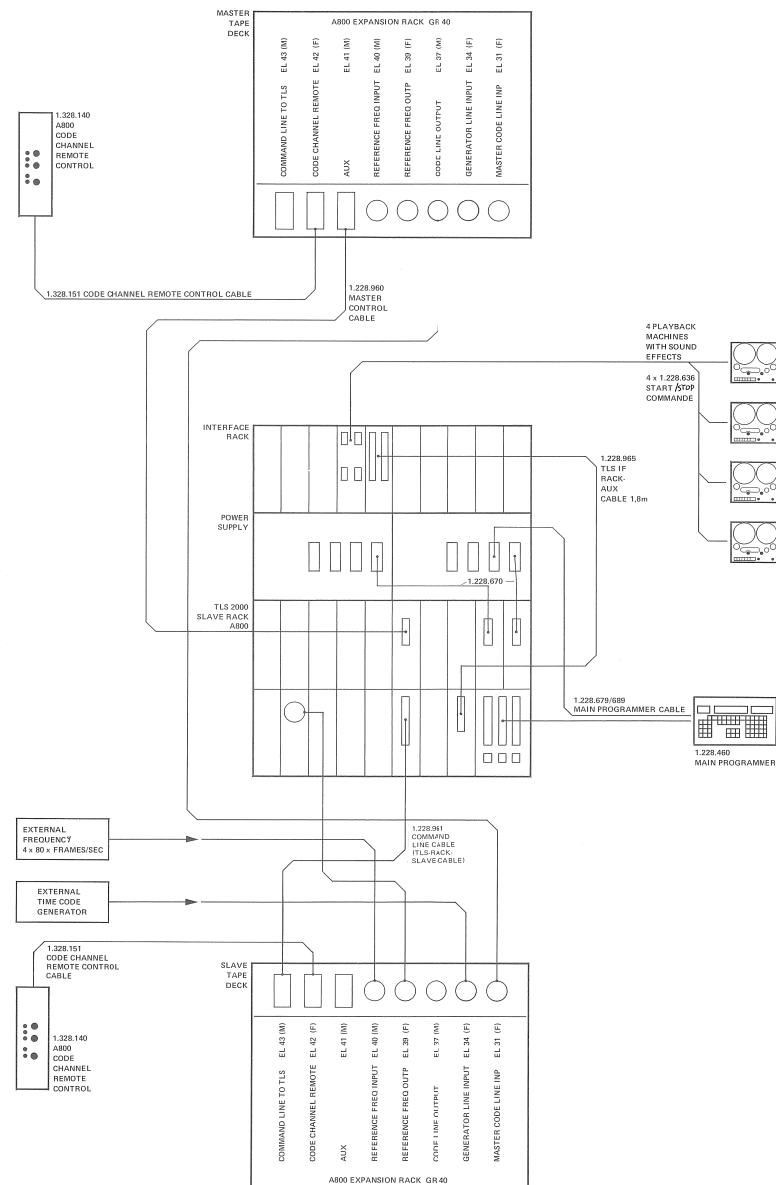
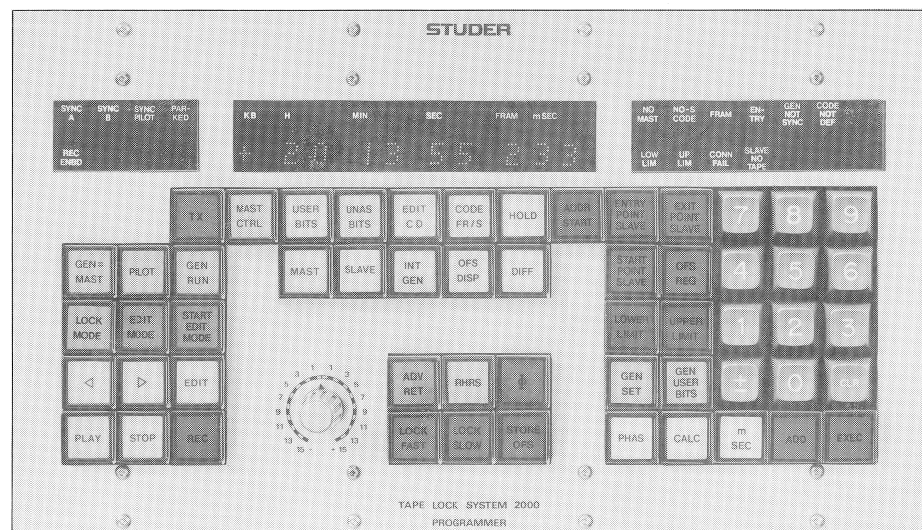
[illegible]

AUDIO REMOTE CONTROL CABLE (15m) 1.328.152



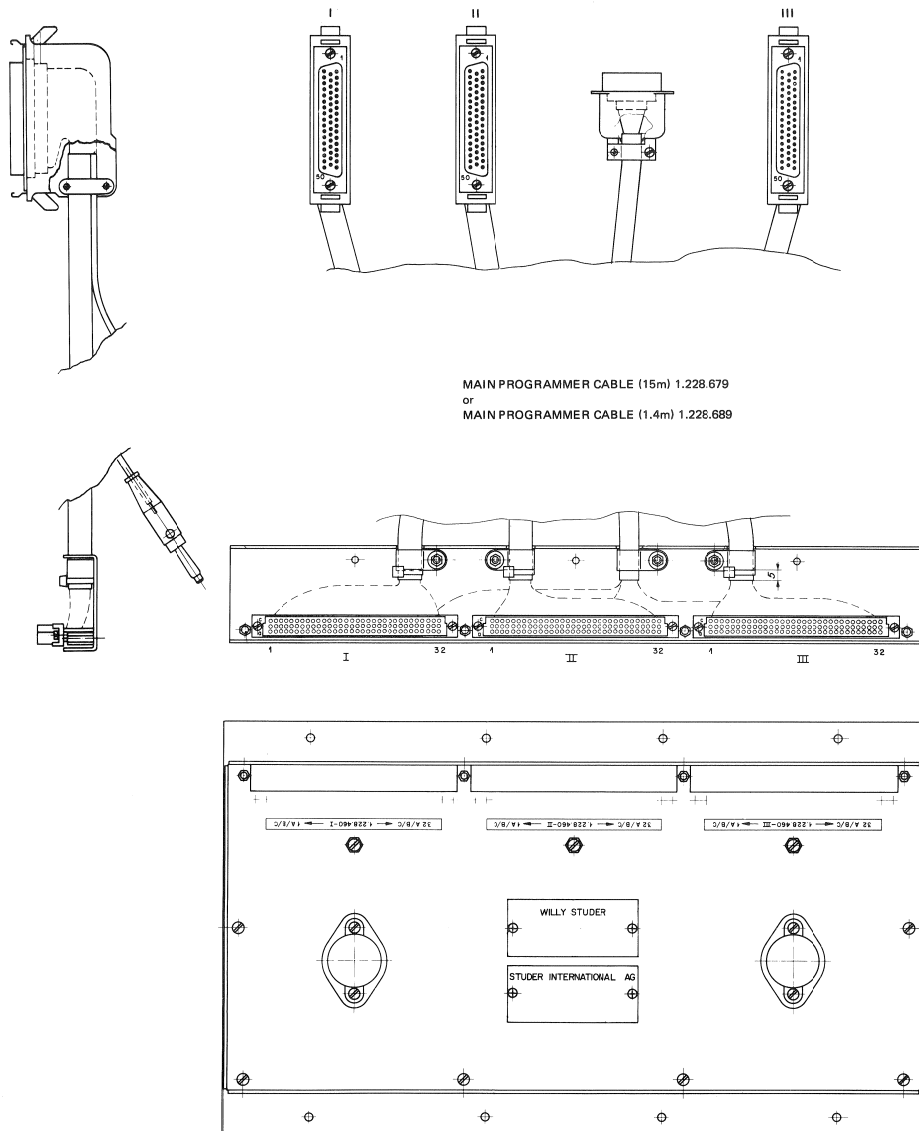
COLOR	SIGNAL	CONNECTOR	
		78 POL	54.02.1112
wht	S-REA-01	1	1
brn	S-REA-02	2	2
grn	S-REA-03	3	3
vio	S-REA-04	4	4
gry/pnk	S-REA-05	5	5
blu/red	S-REA-06	6	6
wht/grn	S-REA-07	7	7
brn/grn	S-REA-08	8	8
wht/yel	S-IN-01	17	17
yel/brn	S-IN-02	18	18
wht/gry	S-IN-03	19	19
gry/brn	S-IN-04	20	20
wht/pnk	S-IN-05	21	21
pnk/brn	S-IN-06	22	22
wht/blu	S-IN-07	23	23
brn/blu	S-IN-08	24	24
wht/red	B-REA-01	25	25
brn/red	B-REA-02	26	26
wht/blk	B-REA-03	27	27
brn/blk	B-REA-04	28	28
gry/grn	B-REA-05	29	29
yel/gry	B-REA-06	30	30
pnk/grn	B-REA-07	31	31
yel/pnk	B-REA-08	32	32
grn/blu	B-RCD-01	33	33
yel/blu	B-RCD-02	34	34
grn/red	B-RCD-03	35	35
yel/red	B-RCD-04	36	36
grn/blk	B-RCD-05	37	37
yel/blk	B-RCD-06	38	38
gry/blu	B-RCD-07	39	39
pnk/blu	B-RCD-08	40	40
gry/red	B-SYN-01	41	41
pnk/red	B-SYN-02	42	42
gry/blk	B-SYN-03	43	43
pnk/blk	B-SYN-04	44	44
blu/blk	B-SYN-05	45	45
red/blk	B-SYN-06	46	46
wht/brn/blk	B-SYN-07	47	47
yel/grn/blk	B-SYN-08	48	48
yel	0.0 Dig.	53	53
red+blk	+5.0	54	54
pnk+blu	S-REMIN	56	56
gry	S-MUTE	70	70
gry/pnk/blk	S-REPM1 R	71	71
blu/red/blk	S-SYNM1 R	72	72
wht/grn/blk	S-INM1 R	73	73
grn/brn/blk	S-INM2 R	74	74
wht/yel/blk	S-SYNM2 R	75	75
yel/brn/blk	S-REPM2 R	78	78

TLS 2000 WIRING: MAIN PROGRAMMER/SLAVE RACK/INTERFACE RACK





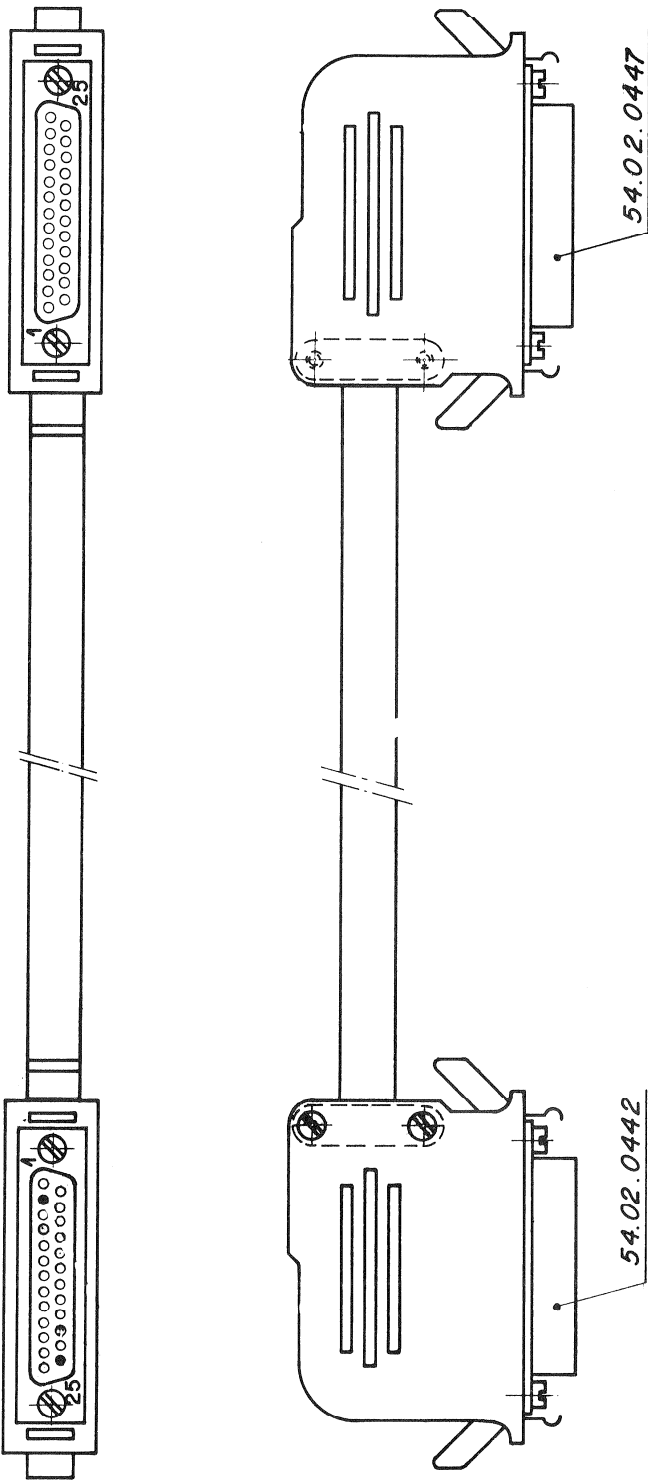
MAIN PROGRAMMER CABLE 1.228.679/689



Sig. Name	Color	Micro Ribbon 14 pol. male	Progr. I 96 pol. AMP	Progr. II 96 pol. AMP	Progr. III 96 pol. AMP
0.0 V	wht	2/3	19A		
0.0 V	wht		19C		
0.0 V	wht			19A	
0.0 V	wht	9/10		19C	19A
0.0 V	wht				19C
0.0 V	wht				
+10 V	blk	4/5	32A		
+10 V	blk		32C		
+10 V	grn			32A	
+10 V	grn	11/12		32C	
+10 V	wht				32A
+10 V	wht				32C

Sig. Name	Color	AMP 1 50 pol. male	Progr. I 96 pol. AMP	Sig. Name	Color	AMP 2 50 pol. male	Progr. II 96 pol. AMP	Sig. Name	Color	AMP 3 50 pol. male	Progr. III 96 pol.
PB 1	wht	2	2 A	BLKDISP 1	wht	1	2 A	NTRMDAT D	wht	1	2 A
BULBDPA 2	brn	3	3 A	BLKDISP 2	brn	3	3 A	ADCDATAC	brn	2	3 A
PBA	grn	4	4 A	NTRMDAT A	grn	4	4 A	MAST	grn	4	4 A
PBH	yel	5	5 A	BULBPBF	yel	5	5 A	USER B	yel	5	5 A
BULBPB 3	grn	6	6 A	BULBDPH 1	grn	6	6 A	SVPC III	grn	6	6 A
EDIT CD	pink	7	7 A	PHASING	pink	7	7 A	ADCDATA B	pink	7	7 A
LOCKFAST	blu	8	8 A	BULBPBG 3	blu	8	8 A	BULBPBM 5	blu	8	8 A
ADVRET	red	9	9 A	MSEC	red	9	9 A	ADCDATA A	red	9	9 A
MSEC	blk	10	10 A	DIFF	blk	10	10 A	BULBPBM 1	blk	10	10 A
GENNSC	vio	11	11 A	FRAM	vio	11	11 A	REC	vio	11	11 A
B-UPPLIM	gry pink	12	13 A	BULBPBH 4	gry pink	12	13 A	EDIT	gry pink	12	13 A
ENTRY	bl red	13	17 A	BULBPBH 3	blu red	13	17 A	BPKMMPRG	blu red	13	17 A
BOFFSREG	wht grn	14	18 A	QFS DISP	wht grn	14	18 A	GENRUN	wht grn	14	18 A
B-EXITSL	brn grn	15	21 A	CODEFR / S	brn grn	15	21 A	TX	brn grn	15	21 A
B-PHAS	wht yel	16	22 A	PBULBHMS	wht yel	16	22 A	SYNCPILT	wht yel	16	22 A
FRAMER	yel grn	17	23 A	ADCDATAE	yel brn	17	23 A	PAST FWD	yel brn	17	23 A
GENSET	wht gry	18	24 A	BULBDPM 1	wht gry	18	24 A	BEDMMPRG	wht gry	18	24 A
B-LOWLIM	gry brn	19	25 A	SLAV	gry brn	19	25 A	PBB	gry brn	19	25 A
NOCODES	wht ping	20	26 A	UNAS B	wht pink	20	26 A	B-RECENB	wht ping	20	26 A
B-ENTRYM	ping brn	21	27 A	BULBPBL 5	pink brn	21	27 A	PBPLAY	ping brn	21	27 A
SVPCI	wht blu	22	28 A	BULBDPP 1	wht blu	22	28 A	PBREC	wht blu	22	28 A
BULBPBF 4	brn blu	23	29 A	ADCDATAD	brn blu	23	29 A	GEN-MAST	brn blu	23	29 A
BULBPBF 3	wht red	24	30 A	BULBHMS	wht red	24	30 A	OSW	wht red	24	30 A
BULBPBF 2	brn red	25	31 A	DISPEN 7	brn red	25	31 A	PLAY	brn red	25	31 A
EXEC	wht blk	26	2 C	DISPEN 1	wht blk	26	2 C	BLK DSP 6	wht blk	26	2 C
PBD	brn blk	27	3 C	DISPEN 0	brn blk	27	3 C	DISPEN 8	brn blk	27	3 C
PBI	gry grn	28	4 C	DISPEN 0	gry grn	28	4 C	K8	gry grn	28	4 C
BULBDPA 1	yel gry	29	5 C	STOREDFS	yel gry	29	5 C	BLK DSP 8	yel gry	29	5 C
INTGEN	pink grn	30	6 C	DISPEN 2	pink grn	30	6 C	DISP 9 +	pink grn	30	6 C
BULBDPB 2	yel pink	31	7 C	BLKDSP 0	yel pink	31	7 C	PB 3	yel pink	31	7 C
CODENDEF	grn blu	32	8 C	DISPEN 3	grn blu	32	8 C	PB 5	grn blu	32	8 C
ADD	yel blu	33	9 C	BLKDSP 2	yel blu	33	9 C	DISP 9 -	yel blu	33	9 C
B-CALC	grn red	34	10 C	HOLD	grn red	34	10 C	PB 5	grn red	34	10 C
SLDECOFF	yel red	35	11 C	LOCKSLow	yel red	35	11 C	PBO	yel red	35	11 C
B-GENUSB	grn blk	36	13 C	NTPMDAT B	grn blk	36	13 C	PBE	grn blk	36	13 C
SLNOTTP	yel blk	37	17 C	BLKDSP 3	yel blk	37	17 C	BULBDPS 2	yel blk	37	17 C
PB 7	gry blu	38	18 C	BULBDPL 1	gry blu	38	18 C	PARKED	gry blu	38	18 C
PBG	pink blu	39	21 C	DISPEN 4	pink blu	39	21 C	BULBDPT 2	pink blu	39	21 C
PB 4	gry red	40	22 C	BULBPBK 5	gry red	40	22 C	STOP	gry red	40	22 C
PBK	pink red	41	23 C	BULBDPA 0	pink red	41	23 C	+ 10 SW	pink red	41	23 C
PBF	gry blk	42	24 C	NTRMDATC	gry blk	42	24 C	BULBDPU 2	gry blk	42	24 C
LWLIMEX	pink blk	43	25 C	SVPC II	pink blk	43	25 C	SYNC B	pink blk	43	25 C
CONNFAL	blu blk	44	26 C	BLKDSP 4	blu blk	44	26 C	BPILMPRG	blu blk	44	26 C
BENT / PK8	red blk	45	27 C	PBULBHMS	red blk	45	27 C	FAST REW	red blk	45	27 C
UPLIMEX	wht brn blk	46	28 C	BLKDSP 5	wht brn blk	46	28 C	BLKMMPRG	wht brn blk	46	28 C
B-NOMAST	yel grn blk	47	29 C	DISPEN 6	yel grn blk	47	29 C	SYNAC A	yel grn blk	47	29 C
	gry pink blk	48	30 C	DISPEN 5	gry pink blk	48	30 C	PB 6	gry pink blk	48	30 C
	blu red blk	50	31 C	BLKDSP 7	blu red blk	50	31 C	PB 2	blu red blk	49	31 C
Key		1		Key		2		Key		3	
Key		48		Key		49		Key		50	
OL	wht grn blk		1 A	OL	wht grn blk		1 A	OADPRG	wht grn blk		1 A
OADPRG 01	grn grn blk		12 A	OADPRG 03	grn grn blk		12 A	OADPRG 05	grn grn blk		12 A
OL	wht yel blk		1 C	OL	wht yel blk		1 C	OADPRG	wht yel blk		1 C
OADPRG 02	yel brn blk		12 C	OADPRG	yel brn blk		12 C	OADPRG 06	yel brn blk		12 C

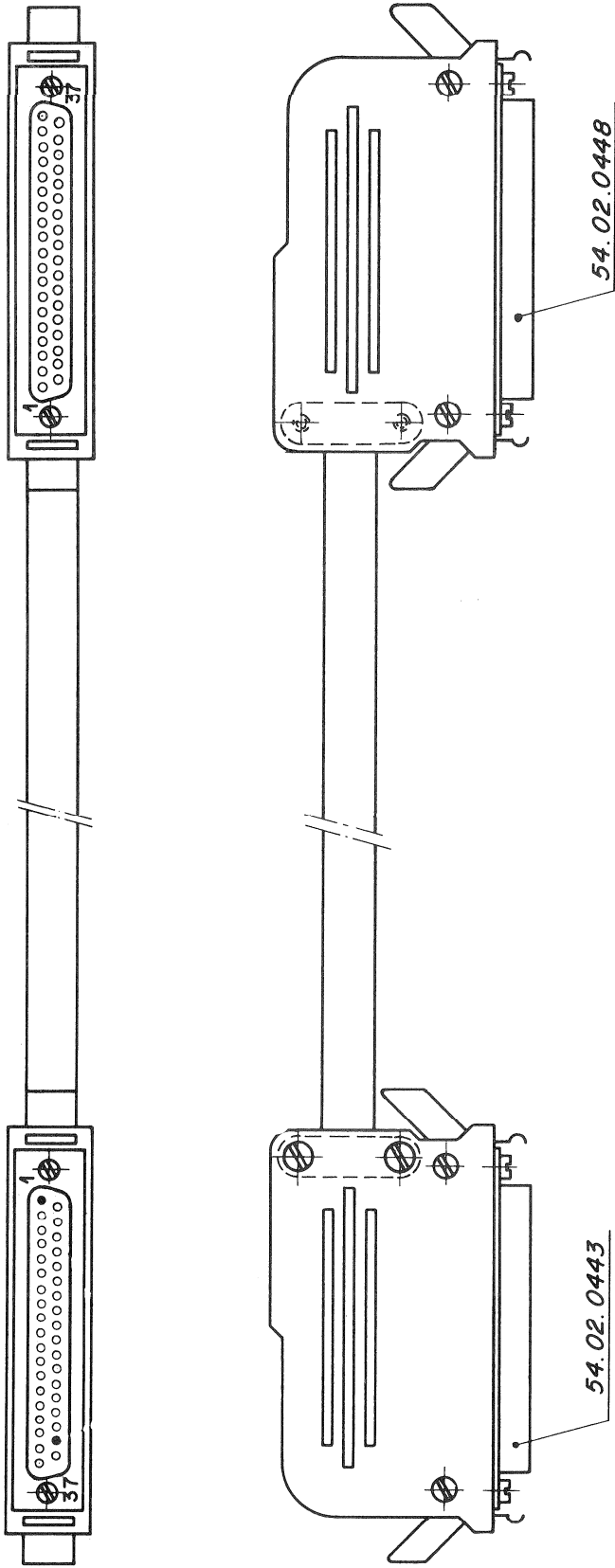
MASTER CONTROL CABLE 1.228.960



SIGNAL NAME	COLOR	CONNECTOR	CONNECTOR
		54.02.0447 25 POL	54.02.0442 25 POL
OL	wht	1	1
KEY	blu	2	2
+ 10	wht	3	3
MPWRON	org	4	4
LKMODDR 2	wht	5	5
PARKEDDR	grn	6	6
EXTRECCM	wht	7	7
MCSUPVIS	brn	8	8
UNUSED	wht	9	9
OK	gry	10	10
OK	red	11	11
+ 24 V	blu	12	12
+ 24 V	red	13	13
OL	org	14	14
MCRECEDR	red	15	15
MCZSETDR	grn	16	16
MCKCUTDR	red	17	17
MCRESDR 1	brn	18	18
MCDAT 1DR	red	19	19
MCDAT 2DR	gry	20	20
MCMUTEDR	blk	21	21
MCDATRDY	blu	22	22
MCRHRSRDR	blk	23	23
MCDATODR	org	24	24
KEY		25	25

★ TWISTED PAIR

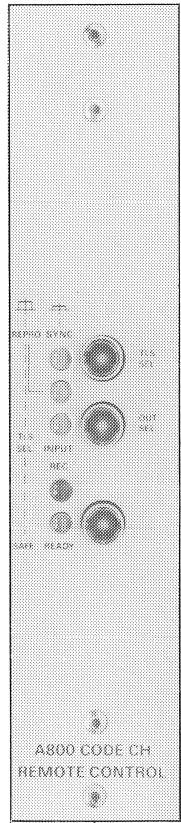
COMMAND LINE (TLS-RACK-SLAVE CABLE) 1.228.961



SIGNAL NAME	COLOR	CONNECTOR 54.02.0443 37 POL	CONNECTOR 54.02.0448 37 POL
0-L	wht }	★ 7	7
0-L	blu }	13	13
0-L	wht }	★ 19	19
0-L	org }	20	20
0-L	wht }	★ 24	24
0-L	grn }	★ 29	29
0-L	wht }	★ 35	35
A800SUPV	brn }	★ 18	18
CCSUPVIS	wht }	★ 3	3
UNUSED	gry }	★ 4	4
ACKNLG	red }	★ 14	14
REQUEST	blu }	★ 15	15
DATACLK	red }	★ 16	16
TRM/REC	org }	★ 17	17
ZCODINSL	red }	★ 22	22
UNUSED	grn }	★ 23	23
ZCODIN1S	red }	★ 28	28
ZEXGENO	brn }	★ 30	30
ZCODGENO	red }	★ 31	31
ZINCODRP	gry }	★ 32	32
A800DATA	blk }	★ 34	34
PROCSUPV	blu }	★ 37	37

TWISTED ★

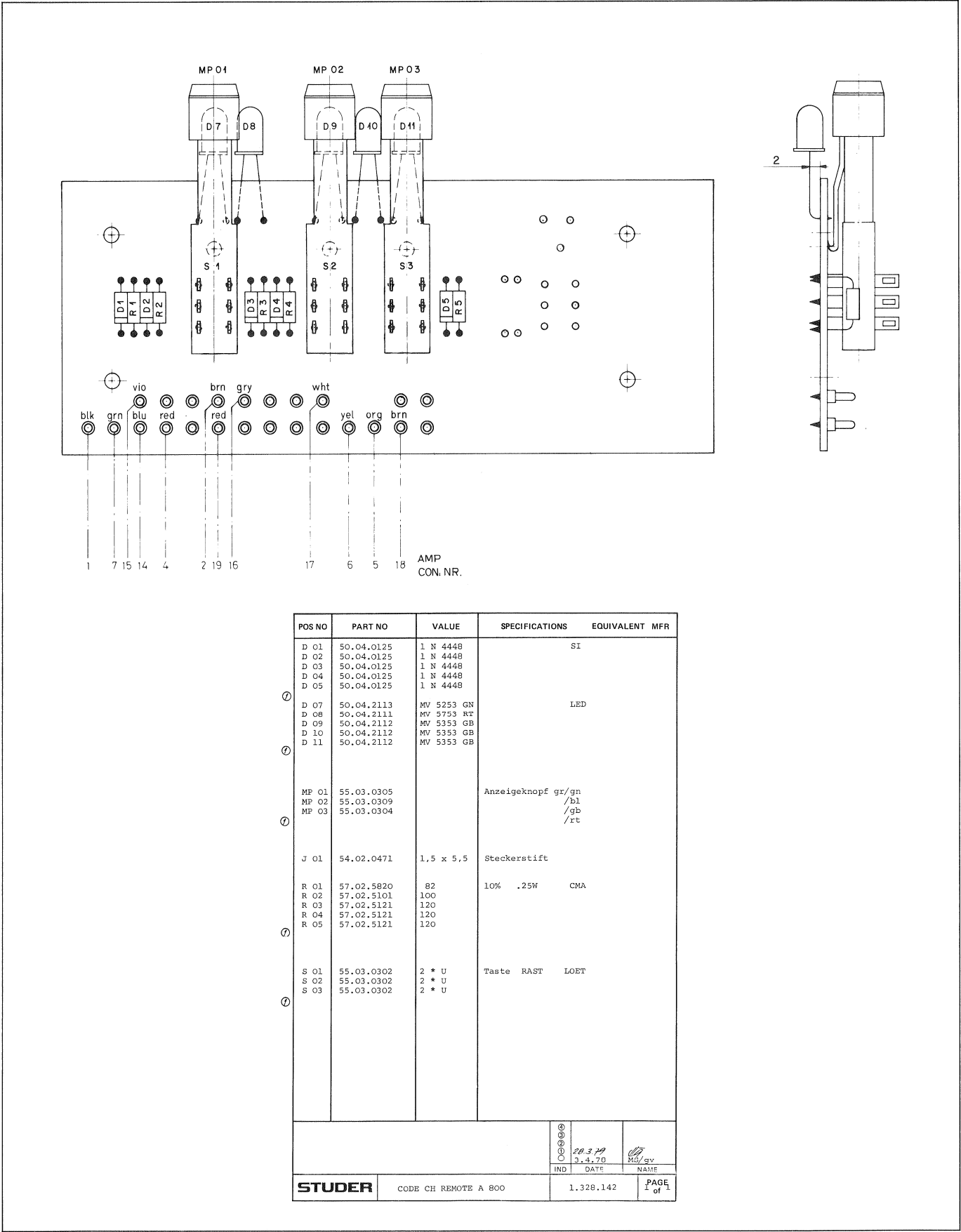
CODE CHANNEL REMOTE WIRING



1.328.151

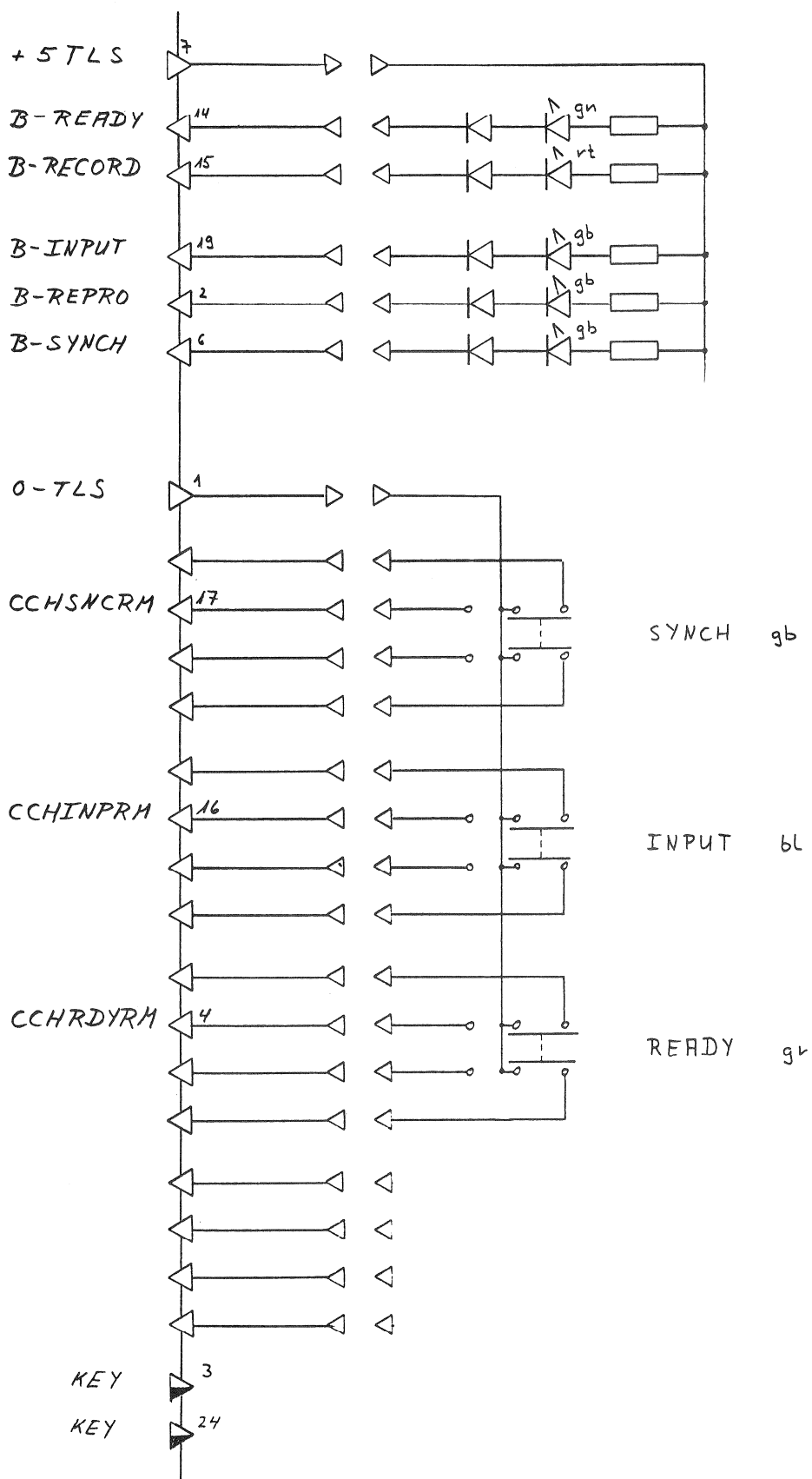
TO CODE CHANNEL
REMOTE CONNECTOR
GR40 EL42
(EXPANSION RACK)

SWITCH BOARD CODE CHANNEL REMOTE 1.328.142

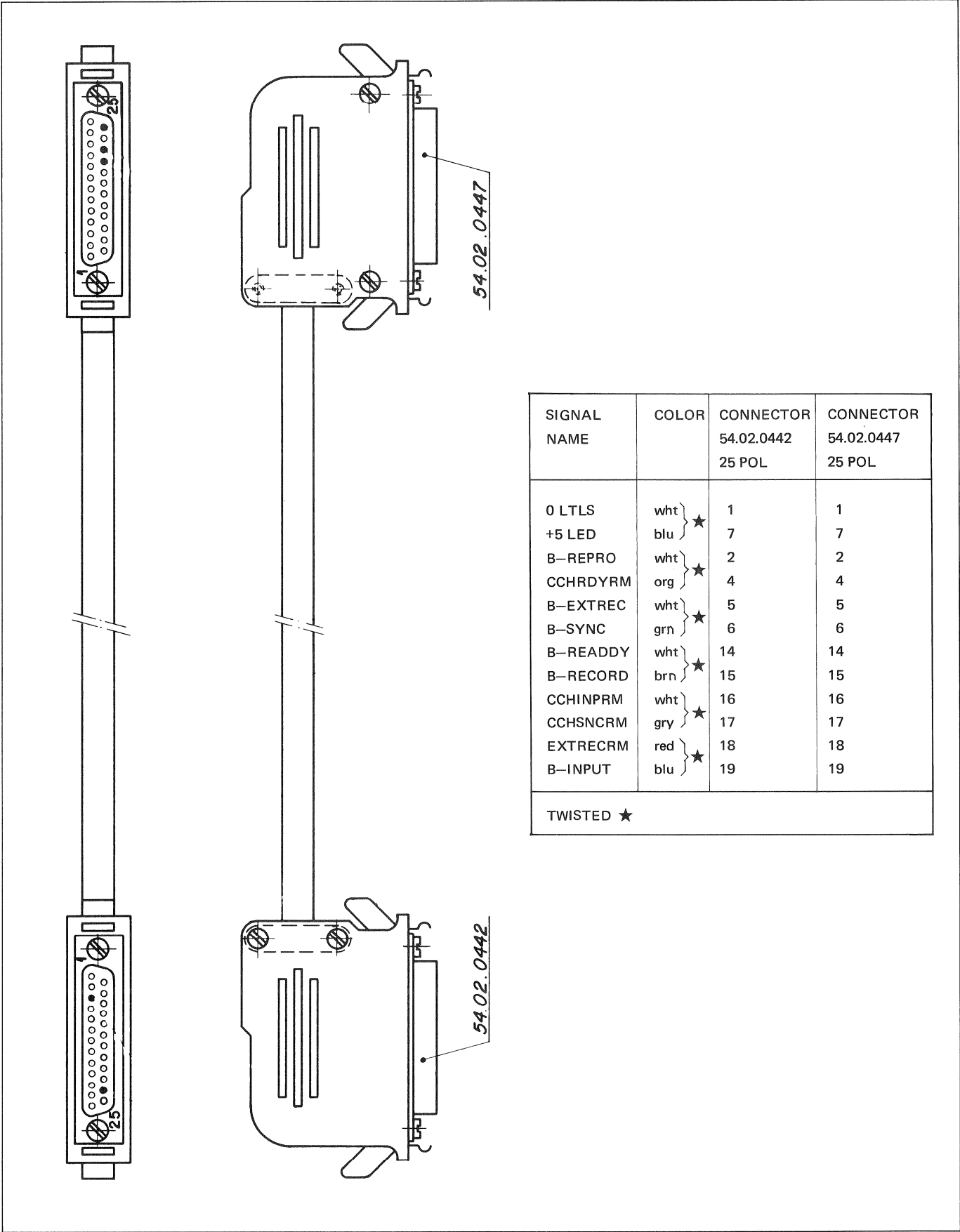




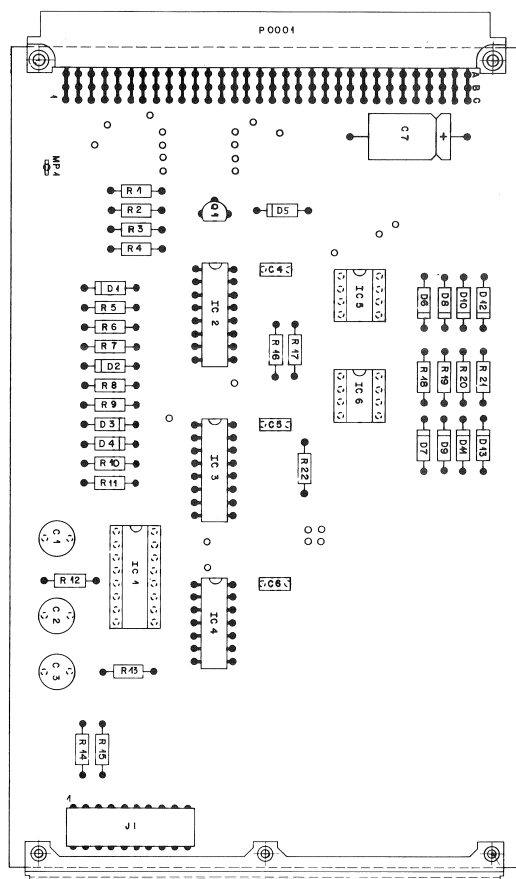
SWITCH BOARD CODE CHANNEL REMOTE 1.328.142



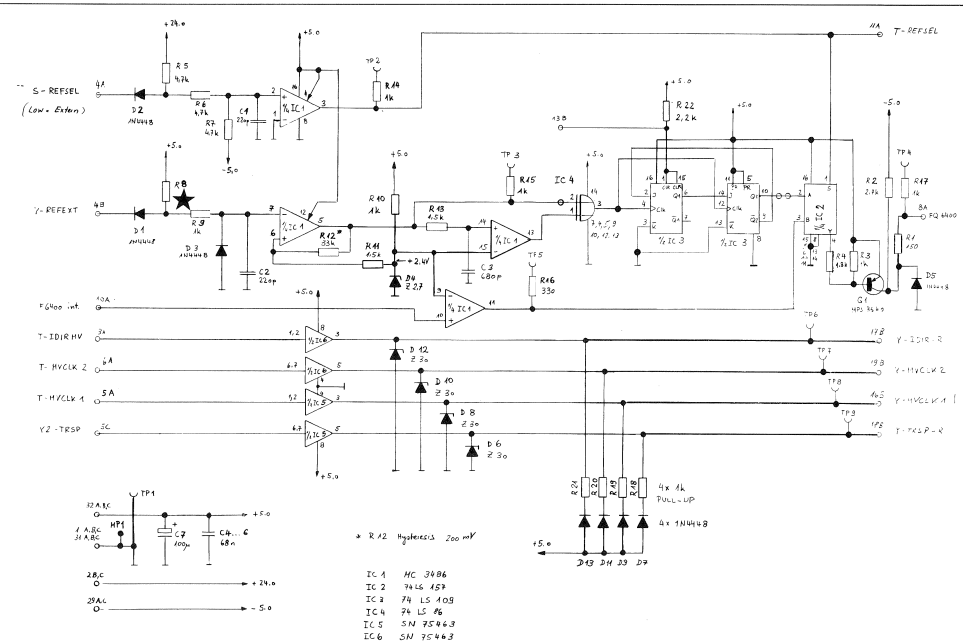
CODE CHANNEL REMOTE CONTROL CABLE 1.328.151



REMOTE EXPANSION PCB 1.180.486 GR35 EL2



NOTE: ONLY WORKS TOGETHER WITH TAPE DECK INTERFACE
1.180.472-00 AND IF MACHINE IS PREWIRED (SN 20334)



IND.	POS+NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
C+0001	59.05.1221	220	18x330V + PP		
C+0002	59.05.1221	220	18x330V + PP		
C+0003	59.05.1081	880	18x330V + PP		
C+0004	59.09.0205	68	20% 63V + Cor		
C+0005	59.09.0205	68	20% 63V + Cor		
C+0006	59.09.0205	68	20% 63V + Cor		
C+0007	59.25.3101	100	10% 10V + EI		
D+0001	50.04.0125	1N4448			
D+0002	50.04.0125	1N4448			
D+0003	50.04.0125	1N4448			
D+0004	50.04.1106	2x7 V	5% 0.4W Z		
D+0005	50.04.0125	1N4448			
D+0006	50.04.0125	1N4448			
D+0007	50.04.0125	1N4448			
D+0008	50.04.0125	1N4448			
D+0009	50.04.0125	1N4448			
D+0010	50.04.0125	1N4448			
D+0011	50.04.0125	1N4448			
D+0012	50.04.0125	1N4448			
D+0013	50.04.0125	1N4448			
IC+0001	50.15.0104	MC 3485P	DS 3486x 1 FACE		
IC+0002	50.06.0197	SN 74 LS 157 N	TTL		
IC+0003	50.06.0197	SN 74 LS 109 N	TTL		
IC+0004	50.06.0084	SN 74 LS 86 N	TTL		
IC+0005	50.25.0203	SN 75463P	DS 3813 N +DRIV		
IC+0006	50.25.0203	SN 75463P	DS 3813 N +DRIV		
J+0001	54.01.0307	10CONTACT	COMMERCIAL INTERCONNECTION SYSTEM		
P+0001	54.01.0359	LEISTE 3 = 32	EURD PRINT		
MP+0001	29.21.4002	LOUTOSE			
Q+0001	50.03.0489	NPS 3640	PNP		

S T U D E R (00) 85/01/25 CK REMOTE EXPANSION CARD 1.180.486.01 PAGE 1

IND.	POS+NO.	PART NO.	VALUE	SPECIFICATIONS / EQUIVALENT	MANUF.
R+0001	57.11.4151	150	0W	2%	
R+0002	57.11.4152	2x7	0W	2%	
R+0003	57.11.4152	1x0	0W	2%	
R+0004	57.11.4152	1x0	0W	2%	
R+0005	57.11.4152	4x7	0W	2%	
R+0006	57.11.4152	4x7	0W	2%	
R+0007	57.11.4152	4x7	0W	2%	
R+0008	57.11.4152	1x0	0W	2%	
R+0009	57.11.4152	1x0	0W	2%	
R+0010	57.11.4152	1x5	0W	2%	
R+0011	57.11.4152	1x5	0W	2%	
R+0012	57.11.4152	3x0	0W	2%	
R+0013	57.11.4152	1x5	0W	2%	
R+0014	57.11.4152	1x0	0W	2%	
R+0015	57.11.4152	1x0	0W	2%	
R+0016	57.11.4152	3x0	0W	2%	
R+0017	57.11.4152	1x0	0W	2%	
R+0018	57.11.4152	1x0	0W	2%	
R+0019	57.11.4152	1x0	0W	2%	
R+0020	57.11.4152	1x0	0W	2%	
R+0021	57.11.4152	1x0	0W	2%	
R+0022	57.11.4152	2x2	0W	2%	

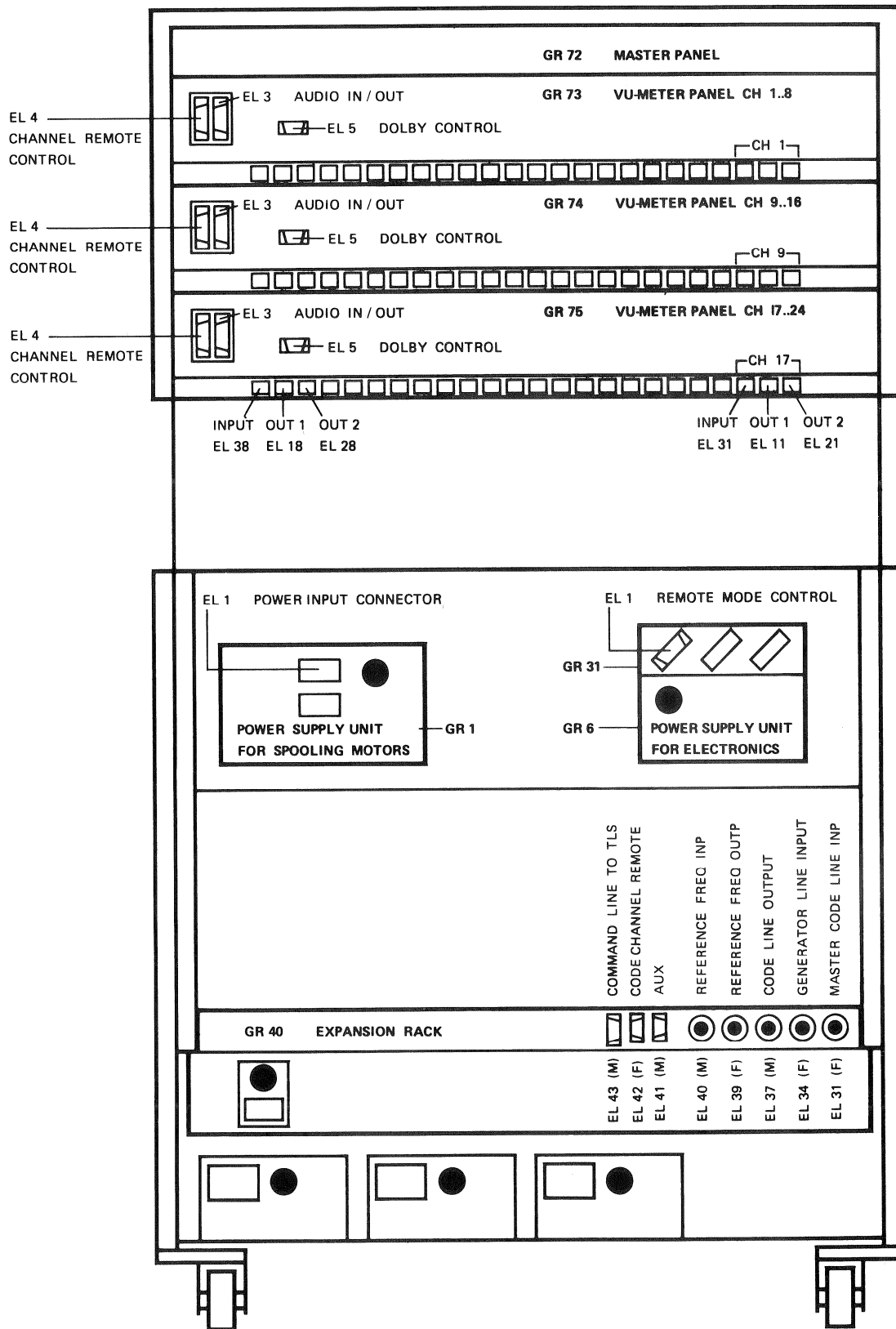
Cor=Ceramic;EI=Electrolytic;PP=Polypropylene

DRIG 85/01/25

S T U D E R (00) 85/01/25 CK REMOTE EXPANSION CARD 1.180.486.01 PAGE 2

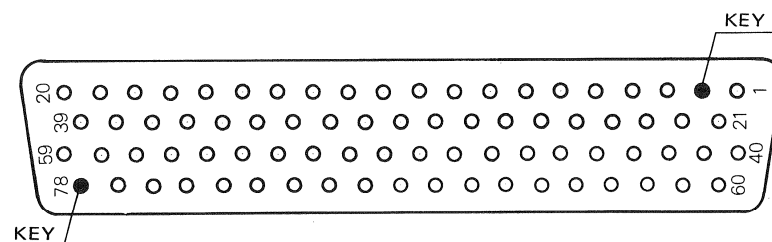
★ For 1.180.486-00: R8 = 3,3k (57.11.4332)
For 1.180.486-81: R8 = 1k (57.11.4102)

REAR CONNECTORS FOR EXTERNAL ACCESS



GR31 EL1 REMOTE MODE CONTROL CONNECTOR

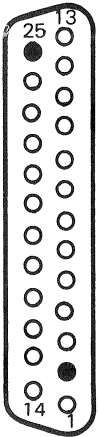
PT	SIG. NAME	COLOR	PT	SIG. NAME	COLOR
1	+ 0.0	blk	40		
2	KEY		41	Y-DSP-E	grn
3	S-REW	red	42	Y-DSP-F	blu
4	S-FORW	org	43	Y-DSP-G	vio
5	S-REPR	yel	44	Y-DSP-H	gry
6	S-STOP	brn	45	Y-KEYB-1	brn
7	S-REC	grn	46	Y-KEYB-2	red
8	S-CUT	blu	47	Y-KEYB-3	org
9	REM. ENB	grn	48	Y-REFEXT*	grn
10	B-REW	red	49	Y2-TRSP-R*	blu
11	B-FORW	org	50	Y-MVCLK2*	vio
12	B-REPR	yel	51	B-LOCACT	brn
13	B-STOP	brn	52	Y-MVCLK1*	gry
14	B-REC	grn	53	Y-IDIR-R*	wht
15	B-CUT	blu	54	S-MUTE-R*	vio
16			55	CRAZCAN	red
17	FAD-1	gry	56	Y-REHEAR	grn
18	FAD-2	wht	57	B-REHEAR	grn
19	B-FAD	brn	58	B-PERCT	wht
20	+ 24.0	red	59	-5.0	blu
21	Y-DXP-A	brn	60	+ 0.0	blk
22	Y-DSP-B	red	61	S-ADDLOC	brn
23	Y-DSP-C	org	62	S-SETADD	red
24	Y-DSP-D	yel	63	S-SETTMR	org
25	Y-DSP-DO	grn	64	S-DNWSLW	yel
26	Y-DSP-D1	blu	65	S-DWNFST	grn
27	Y-DSP-D2	vio	66	S-UPSLW	blu
28	Y-DSP-D3	gry	67	S-UPFST	vio
29	S-RESET	brn	68	S-SETVSP	gry
30	S-ZLOC	vio	69	S-VARISP	wht
31	B-ZLOC	wht	70	S-HTONE	brn
32			71	B-ADDLOC	red
33	+ 5.0	grn	72	B-SETADD	org
34	+ 5.0	grn	73	B-SETTMR	yel
35	+ 5.0	grn	74	B-SETVSP	grn
36	+ 0.0	blk	75	B-VARISP	blu
37	+ 0.0	blk	76	B-SYNC	vio
38	+ 0.0	blk	77	B-HTONE	gry
39	+ 5.0	grn	78	KEY	



* = OPTION 1.180.098.00

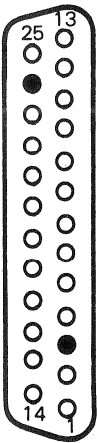
GR40 EL41 AUX CONNECTOR

1	OL	brn
2	KEY	org
3	+10	grn
4		vio
5	LKMØDEDR	wht
6	PARKEDDR	brn
8		grn
9	+24 MAST	vio
10	OK	wht
11	OK	brn
12	+24	org
13	+24	grn
14	OL	red
15	MCRECEDR	yel
16	MCZSETDR	blu
17	MCKCUTDR	gry
18	MCRESDR1	blk
19	MCDAT1DR	red
20	MCDAT2DR	yel
21	MCMUTEDR	blu
22	MCDATRDY	gry
23	MCRESDR2	blk
24	MCDATODR	red
25	KEY	yel



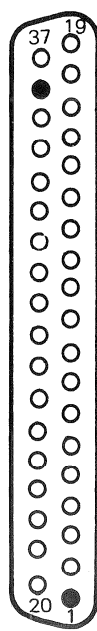
GR40 EL42 CODE CHANNEL REMOTE CONNECTOR

1	O—LTLS	brn
2	B—REPRØ	org
3	KEY	grn
4	CCHRDYRM	vio
6	B—SYNCH	brn
7	+ 5 LED	org
8		grn
9		vio
10		wht
11		brn
12		org
13		grn
14	B—READY	red
15	B—RECØRD	yel
16	CCHINPRM	blu
17	CCHSNCRM	gry
18	EXTRECRM	blk
19	B—INPUT	red
20		yel
21		blu
22		gry
23		blk
24	KEY	red
25		yel



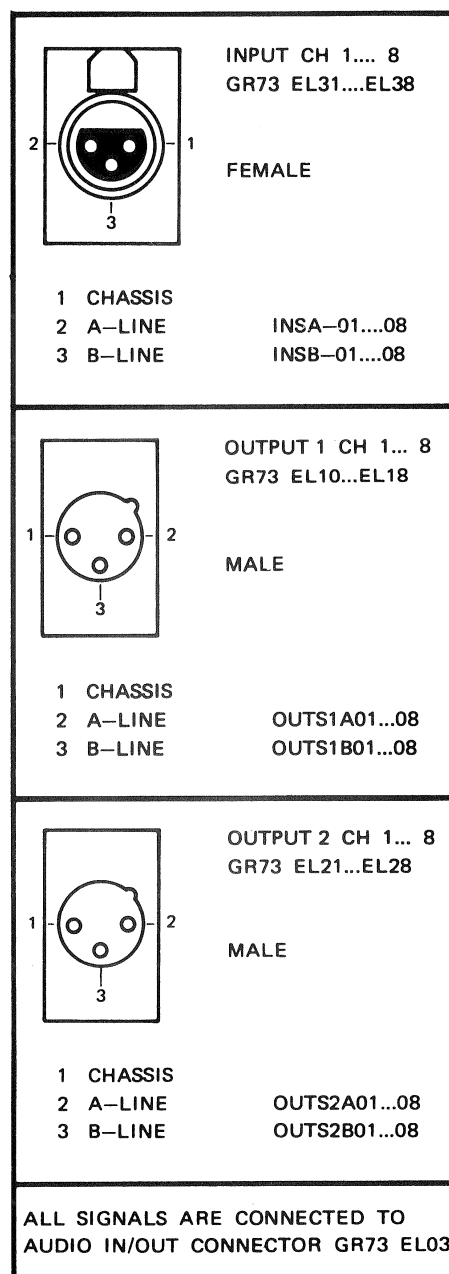
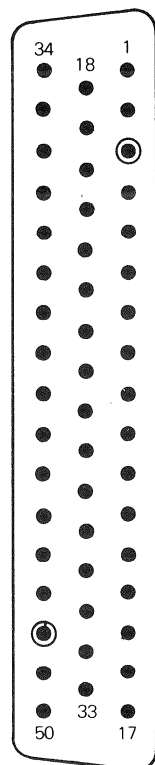
GR40 EL43 TLS COMMAND LINE CONNECTOR

1	KEY	brn
2		org
3	CCSUPVIS	grn
4		vio
5		wht
6		brn
7	O-L	org
8		grn
9		vio
10		wht
11		brn
12		org
13	O-L	grn
14	ACKNLG	vio
15	REQUEST	wht
16	DATACLK	brn
17	TRM/REC	org
18	A800SUPV	grn
19	O-L	vio
20	O-L	red
21		yel
22	ZCØDINSL	blu
23		gry
24	O-L	blk
25		red
26		yel
27		blu
28	ZCØDIN1S	gry
29	O-L	blk
30	ZEXGENØ	red
31	ZCØDGENØ	yel
32	ZINCØDRP	blu
33		gry
34	A800DATA	blk
35	O-L	red
36	KEY	yel
37	PRØCSUPV	blu



GR73 EL3 AUDIO IN/OUT CONNECTOR CH 1...8

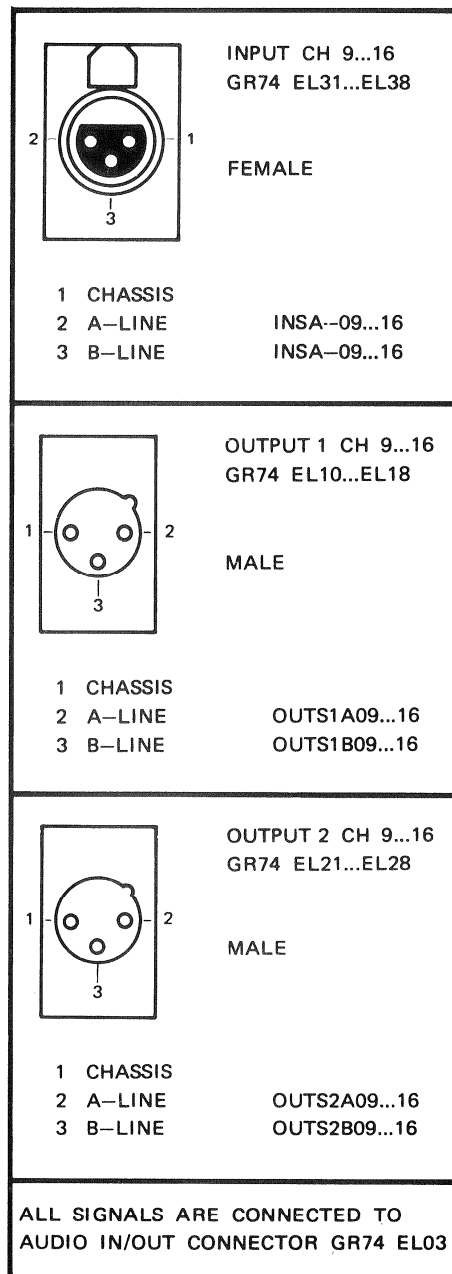
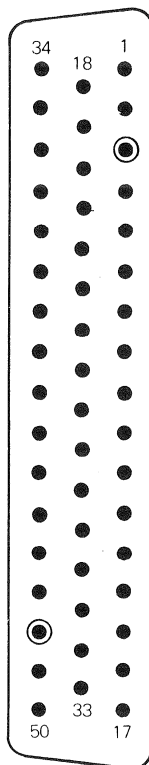
PT	SIG. NAME	COLOR
1	INSA-01	blk
2	INSB-01	blu
3	KEY	
4	INSA-02	blk
5	INSB-02	blu
6	INSA-03	blk
7	INSB-03	blu
8	INSA-04	blk
9	INSB-04	blu
10	INSA-05	blk
11	INSB-05	blu
12	INSA-06	blk
13	INSB-06	blu
14	INSA-07	blk
15	INSB-07	blu
16	INSA-08	blk
17	INSB-08	blu
18	OUTS2A01	blk
19	OUTS2B01	blu
20	OUTS2A02	blk
21	OUTS2B02	blu
22	OUTS2A03	blk
23	OUTS2B03	blu
24	OUTS2A04	blk
25	OUTS2B04	blu
26	OUTS2A05	blk
27	OUTS2B05	blu
28	OUTS2A06	blk
29	OUTS2B06	blu
30	OUTS2A07	blk
31	OUTS2B07	blu
32	OUTS2A08	blk
33	OUTS2B08	blu
34	OUTS1A01	blk
35	OUTS1B01	blu
36	OUTS1A02	blk
37	OUTS1B02	blu
38	OUTS1A03	blk
39	OUTS1B03	blu
40	OUTS1A04	blk
41	OUTS1B04	blu
42	OUTS1A05	blk
43	OUTS1B05	blu
44	OUTS1A06	blk
45	OUTS1B06	blu
46	OUTS1A07	blk
47	OUTS1B07	blu
48	KEY	
49	OUTS1A08	blk
50	OUTS1B08	blu



A- AND B- SIGNALS ARE
SYMMETRICAL AND FLOATING

GR74 EL3 AUDIO IN/OUT CONNECTOR CH 9...16

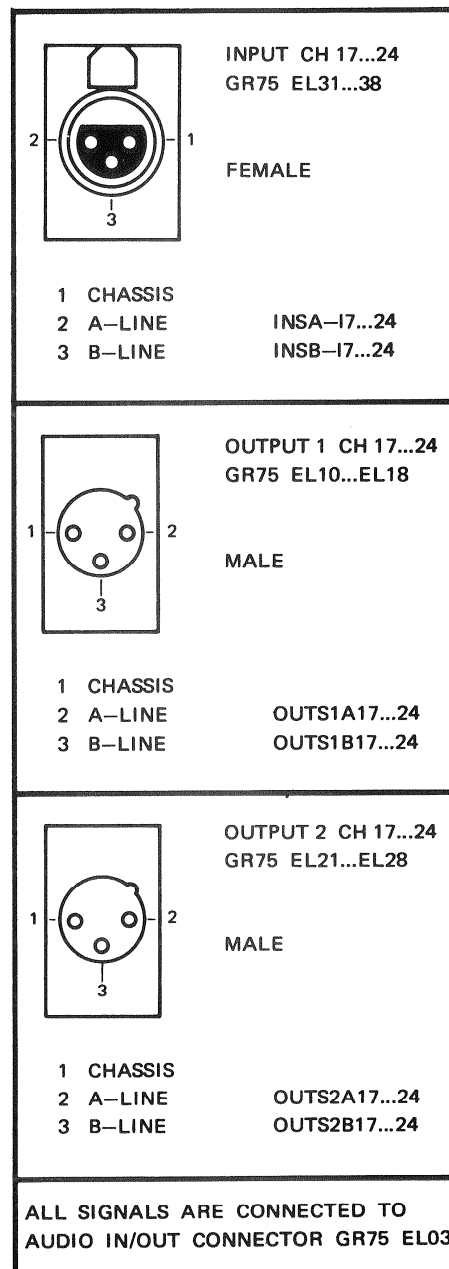
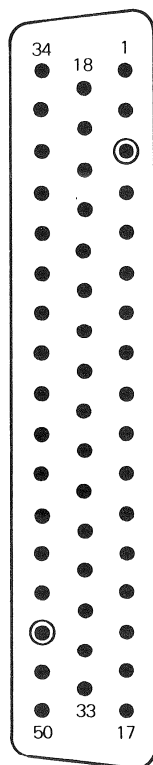
PT	SIG. NAME	COLOR
1	INSA-09	blk
2	INSB-09	blu
3	KEY	
4	INSA-10	blk
5	INSB-10	blu
6	INSA-11	blk
7	INSB-11	blu
8	INSA-12	blk
9	INSB-12	blu
10	INSA-13	blk
11	INSB-13	blu
12	INSA-14	blk
13	INSB-14	blu
14	INSA-15	blk
15	INSB-15	blu
16	INSA-16	blk
17	INSB-16	blu
18	OUTS2A09	blk
19	OUTS2B09	blu
20	OUTS2A10	blk
21	OUTS2B10	blu
22	OUTS2A11	blk
23	OUTS2B11	blu
24	OUTS2A12	blk
25	OUTS2B12	blu
26	OUTS2A13	blk
27	OUTS2B13	blu
28	OUTS2A14	blk
29	OUTS2B14	blu
30	OUTS2A15	blk
31	OUTS2B15	blu
32	OUTS2A16	blk
33	OUTS2B16	blu
34	OUTS1A09	blk
35	OUTS1B09	blu
36	OUTS1A10	blk
37	OUTS1B10	blu
38	OUTS1A11	blk
39	OUTS1B11	blu
40	OUTS1A12	blk
41	OUTS1B12	blu
42	OUTS1A13	blk
43	OUTS1B13	blu
44	OUTS1A14	blk
45	OUTS1B14	blu
46	OUTS1A15	blk
47	OUTS1B15	blu
48	KEY	
49	OUTS1A16	blk
50	OUTS1B16	blu



A- AND B- SIGNALS ARE
SYMMETRICAL AND FLOATING

GR75 EL3 AUDIO IN/OUT CONNECTOR CH 17...24

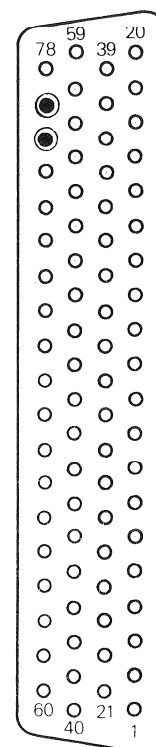
PT	SIG. NAME	COLOR
1	INSA-17	blk
2	INSB-17	blu
3	KEY	
4	INSA-18	blk
5	INSB-18	blu
6	INSA-19	blk
7	INSB-19	blu
8	INSA-20	blk
9	INSB-20	blu
10	INSA-21	blk
11	INSB-21	blu
12	INSA-22	blk
13	INSB-22	blu
14	INSA-23	blk
15	INSB-23	blu
16	INSA-24	blk
17	INSB-24	blu
18	OUTS2A17	blk
19	OUTS2B17	blu
20	OUTS2A18	blk
21	OUTS2B18	blu
22	OUTS2A19	blk
23	OUTS2B19	blu
24	OUTS2A20	blk
25	OUTS2B20	blu
26	OUTS2A21	blk
27	OUTS2B21	blu
28	OUTS2A22	blk
29	OUTS2B22	blu
30	OUTS2A23	blk
31	OUTS2B23	blu
32	OUTS2A24	blk
33	OUTS2B24	blu
34	OUTS1A17	blk
35	OUTS1B17	blu
36	OUTS1A18	blk
37	OUTS1B18	blu
38	OUTS1A19	blk
39	OUTS1B19	blu
40	OUTS1A20	blk
41	OUTS1B20	blu
42	OUTS1A21	blk
43	OUTS1B21	blu
44	OUTS1A22	blk
45	OUTS1B22	blu
46	OUTS1A23	blk
47	OUTS1B23	blu
48	KEY	
49	OUTS1A24	blk
50	OUTS1B24	blu



A- AND B- SIGNALS ARE
SYMMETRICAL AND FLOATING

GR73 EL4 CHANNEL REMOTE CONTROL CONNECTOR CH 1...8

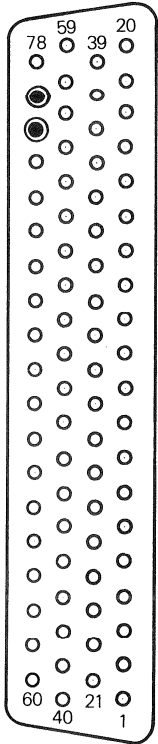
PT	SIG. NAME	COLOR
1	S-REA-01	brn
2	S-REA-02	red
3	S-REA-03	org
4	S-REA-04	red
5	S-REA-05	grn
6	S-REA-06	red
7	S-REA-07	blu
8	S-REA-08	red
9	S-REP-01	brn
10	S-REP-02	yel
11	S-REP-03	org
12	S-REP-04	yel
13	S-REP-05	grn
14	S-REP-06	yel
15	S-REP-07	blu
16	S-REP-08	yel
17	S-IN-01	brn
18	S-IN-02	wht
19	S-IN-03	org
20	S-IN-04	wht
21	S-IN-05	grn
22	S-IN-06	wht
23	S-IN-07	blu
24	S-IN-08	wht
25	B-REA-01	brn
26	B-REA-02	blk
27	B-REA-03	org
28	B-REA-04	blk
29	B-REA-05	grn
30	B-REA-06	blk
31	B-REA-07	blu
32	B-REA-08	blk
33	B-RCD-01	brn
34	B-RCD-02	red
35	B-RCD-03	org
36	B-RCD-04	red
37	B-RCD-05	grn
38	B-RCD-06	red
39	B-RCD-07	blu
40	B-RCD-08	red
41	B-SYN-01	brn
42	B-SYN-02	wht
43	B-SYN-03	org
44	B-SYN-04	wht
45	B-SYN-05	grn
46	B-SYN-06	wht
47	B-SYN-07	blu
48	B-SYN-08	wht
49		
50		
51		
52		
53	0.0-DIG	org



54	+ 5.0 -A	org
55		
56	S-REMIN	blk
57		
58		
59		
60		
61		
62		
63		
64		
65		
66		
67		
68		
69		
70		
71	S-REPM1R	red
72	S-SYNM1R	org
73	S-INM1R	brn
74	S-NM2R	blu
75	S-SYNM2R	wht
76	KEY	
77	KEY	
78	S-REPM2R	gry

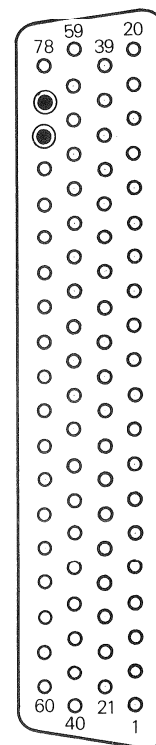
GR74 EL4 CHANNEL REMOTE CONTROL CONNECTOR CH 9...16

PT	SIG. NAME	COLOR			
1	S-REA-09	brn			
2	S-REA-10	red			
3	S-REA-11	org			
4	S-REA-12	red			
5	S-REA-13	grn			
6	S-REA-14	red			
7	S-REA-15	blu			
8	S-REA-16	red			
9	S-REP-09	brn			
10	S-REP-10	yel			
11	S-REP-11	org			
12	S-REP-12	yel			
13	S-REP-13	grn			
14	S-REP-14	yel			
15	S-REP-15	blu			
16	S-REP-16	yel			
17	S-IN-09	brn			
18	S-IN-10	wht			
19	S-IN-11	org			
20	S-IN-12	wht			
21	S-IN-13	grn			
22	S-IN-14	wht			
23	S-IN-15	blu			
24	S-IN-16	wht	54	+ 5.0 -B	org
25	B-REA-09	brn	55		
26	B-REA-10	blk	56	S-REMIN	blk
27	B-REA-11	org	57		
28	B-REA-12	blk	58		
29	B-REA-13	grn	59		
30	B-REA-14	blk	60		
31	B-REA-15	blu	61		
32	B-REA-16	blk	62		
33	B-RCD-09	brn	63		
34	B-RCD-10	red	64		
35	B-RCD-11	org	65		
36	B-RCD-12	red	66		
37	B-RCD-13	grn	67		
38	B-RCD-14	red	68		
39	B-RCD-15	blu	69		
40	B-RCD-16	red	70		
41	B-SYN-09	brn	71	S-REPM1R	red
42	B-SYN-10	wht	72	S-SYNM1R	org
43	B-SYN-11	org	73	S-INM1R	brn
44	B-SYN-12	wht	74	S-INM2R	blu
45	B-SYN-13	grn	75	S-SYNM2R	wht
46	B-SYN-14	wht	76	KEY	
47	B-SYN-15	blu	77	KEY	
48	B-SYN-16	wht	78	S-REPM2r	gry
49					
50					
51					
52					
53	0.0-DIG	blk			



GR75 EL4 CHANNEL REMOTE CONTROL CONNECTOR CH 17...24

PT	SIG. NAME	COLOR
1	S-REA-17	brn
2	S-REA-18	red
3	S-REA-19	org
4	S-REA-20	red
5	S-REA-21	grn
6	S-REA-22	red
7	S-REA-23	blu
8	S-REA-24	red
9	S-REP-17	brn
10	S-REP-18	yel
11	S-REP-19	org
12	S-REP-20	yel
13	S-REP-21	grn
14	S-REP-22	yel
15	S-REP-23	blu
16	S-REP-24	yel
17	S-IN-17	brn
18	S-IN-18	wht
19	S-IN-19	org
20	S-IN-20	wht
21	S-IN-21	grn
22	S-IN-22	wht
23	S-IN-23	blu
24	S-IN-24	wht
25	B-REA-17	brn
26	B-REA-18	blk
27	B-REA-19	org
28	B-REA-20	blk
29	B-REA-21	grn
30	B-REA-22	blk
31	B-REA-23	blu
32	B-REA-24	blk
33	B-RCD-17	brn
34	B-RCD-18	red
35	B-RCD-19	org
36	B-RCD-20	red
37	B-RCD-21	grn
38	B-RCD-22	red
39	B-RCD-23	blu
40	B-RCD-24	red
41	B-SYN-17	brn
42	B-SYN-18	wht
43	B-SYN-19	org
44	B-SYN-20	wht
45	B-SYN-21	grn
46	B-SYN-22	wht
47	B-SYN-23	blu
48	B-SYN-24	wht
49		
50		
51		
52		
53	0.0-DIG	blk



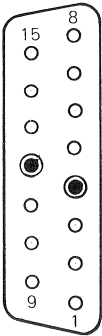
54	+5.0 -C	org
55		
56	S-REMIN	blk
57		
58		
59		
60		
61		
62		
63		
64		
65		
66		
67		
68		
69		
70		
71	S-REPM1R	red
72	S-SYNM1R	org
73	S-INM1R	brn
74	S-INM2R	blu
75	S-SYNM2R	wht
76	KEY	
77	KEY	
78	S-REPM2R	gry

GR73/74/75 EL5 DOLBY CONTROL CONNECTOR CH 1...8/9...16/17...24

GR 73
VU-METER PANEL CH 01 ... 08

EL 05
DOLBY CONTROL

PT	SIG. NAME	COLOR
1	B-RCD-01	brn
2	B-RCD-02	red
3	B-RCD-03	org
4	KEY	
5	B-RCD-04	red
6	B-RCD-05	grn
7		
8		
9		
10	B-RCD-06	red
11	B-RCD-07	blu
12	KEY	
13	B-RCD-08	red
14	+ 24.0	brn
15	0.0-DIGA	blk



GR 74
VU-METER PANEL CH 09 ... 16

EL 05
DOLBY CONTROL

PT	SIG. NAME	COLOR
1	B-RCD-09	brn
2	B-RCD-10	red
3	B-RCD-11	org
4	KEY	
5	B-RCD-12	red
6	B-RCD-13	grn
7		
8		
9		
10	B-RCD-14	red
11	B-RCD-15	blu
12	KEY	
13	B-RCD-16	red
14	+ 24.0	brn
15	0.0-DIGB	blk

GR 75
VU-METER PANEL 17 ... 24

EL 05
DOLBY CONTROL

PT	SIG. NAME	COLOR
1	B-RCD-17	brn
2	B-RCD-18	red
3	B-RCD-19	org
4	KEY	
5	B-RCD-20	red
6	B-RCD-21	grn
7		
8		
9		
10	B-RCD-22	red
11	B-RCD-23	blu
12	KEY	
13	B-RCD-24	red
14	+ 24.0	brn
15	0.0-DIGC	blk

9. ERSATZTEILE

Das vorliegende Kapitel enthält die lieferbaren Ersatzteile für die A800.

Für alle Baugruppen wird immer dieselbe Reihenfolge in der Darstellung beibehalten:

- Ausbau der betreffenden Baugruppe und zugehöriges Montagematerial.
- Allfällige Pflegehinweise*.
- Explosionszeichnung, wo erforderlich und Bestellnummern für alle einzelnen lieferbaren Ersatzteile.

Teile, die keine Nummern tragen, sind nicht einzeln lieferbar.

* Eine Zusammenfassung aller Pflegehinweise für die tägliche Pflege befindet sich in Kapitel 2, Abschnitt 7.

9. SPARE PARTS

This section comprises all available spare parts for the A800 recorder.

All component groups are shown in the same order:

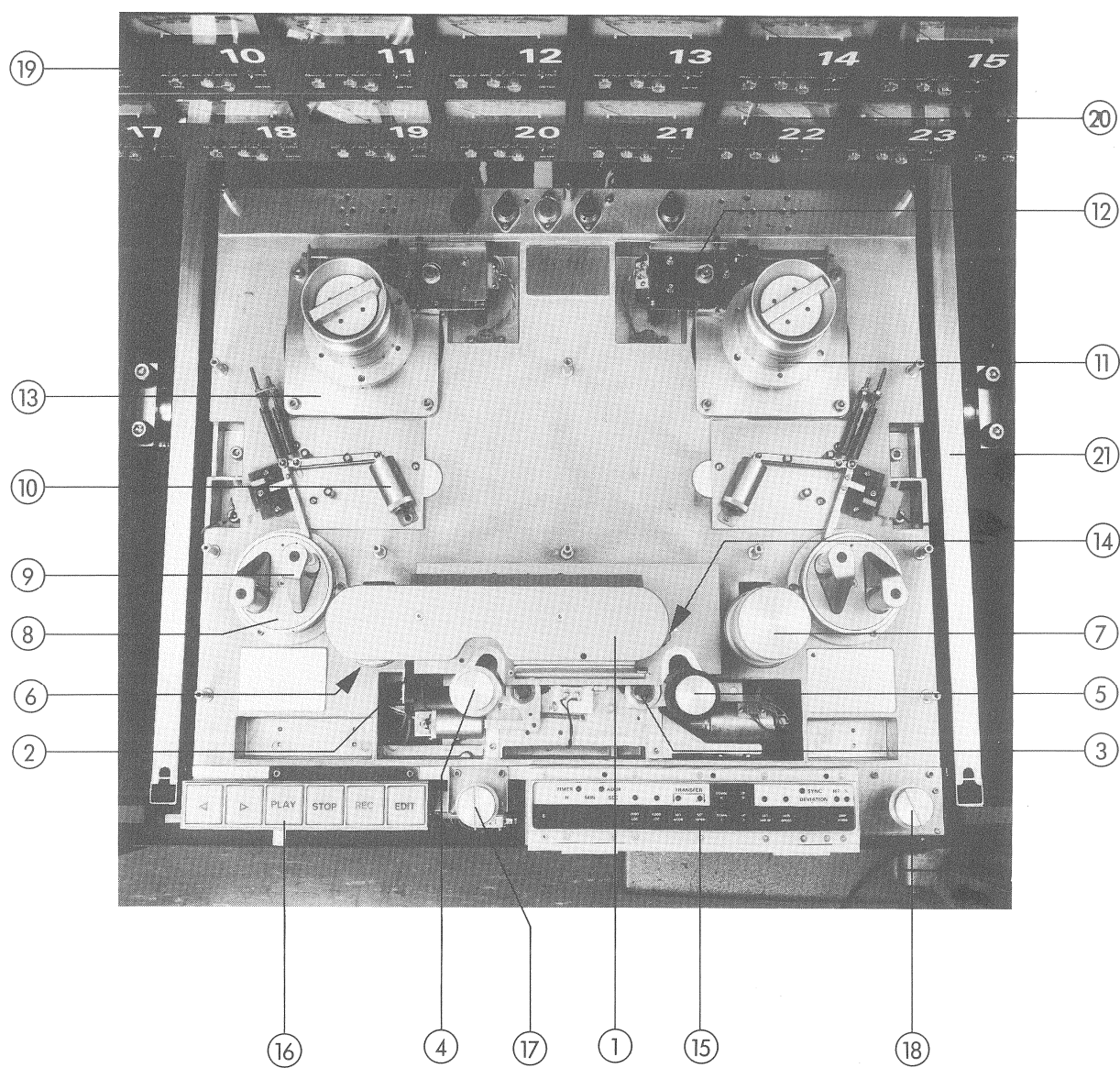
- Removal of the component group and mounting parts.
- Maintenance instructions if necessary*.
- Exploded view of the group if necessary and ordering numbers for all available spare parts.

Parts, which carry no ordering number are not available separately.

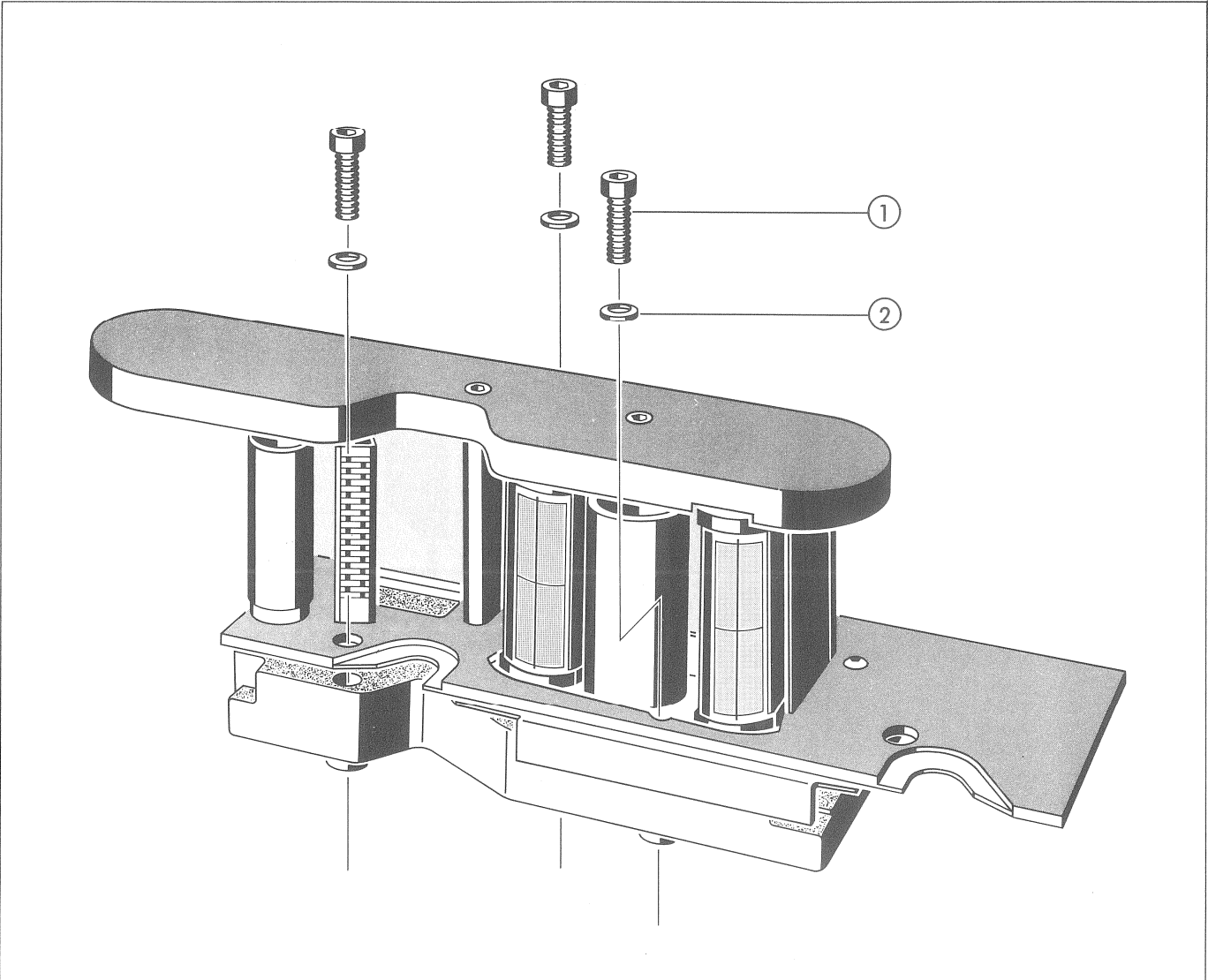
* A summary of all maintenance instructions for daily care can be found in section 2.7.

[illegible]

CONTENTS



HEAD BLOCK ASSEMBLY 2" / 1"



AUSBAU

- 3 Schrauben von oben durch den Kopfträgerdeckel lösen (es ist nicht nötig, diese Schrauben zu entfernen).
 - Kopfträger vorsichtig nach oben ausfahren und nicht an der Tonmotorachse anschlagen.
- Den Kopfträger nicht umdrehen, sonst fallen die Befestigungsschrauben heraus.

REMOVAL

- Loosen 3 screws from top through the headblock cover (it is not necessary to remove these screws).
 - Carefully lift out headblock assembly.
- Do not turn headblock assembly, otherwise the screws will fall off.

PFLEGEHINWEISE

Die Köpfe werden mit in Spiritus getränkter Watte (oder weichem Lappen) gereinigt.
Achtung:
Keine magnetischen Felder (Werkzeuge, Kopfhörer usw.) in die Nähe der Magnetköpfe bringen.

CARE

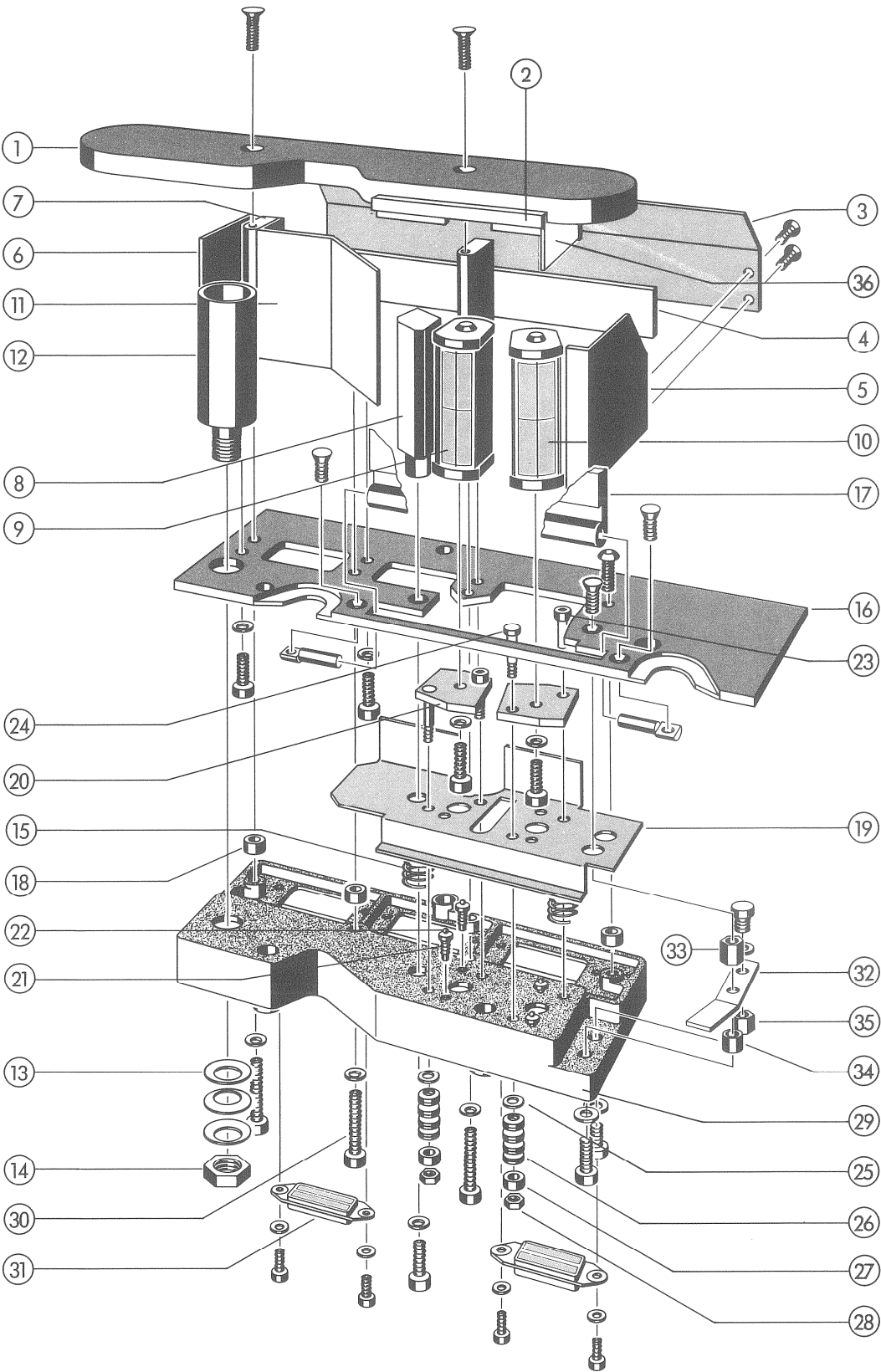
Clean heads with cotton swab (or soft piece of cloth) moistened with methylated spirits.
Caution:
Do not expose heads to magnetic fields (tools, headphones, etc.)

BEFESTIGUNGSMATERIAL

MOUNTING ACCESSORIES

INDEX	QTY	ORDER NUMBER	BEZEICHNUNG	PART NAME
01	3	21.53.0462	Schraube M4 x 25	Screw M4 x 25
02	3	24.16.1040	Sicherungsscheibe	Lock washer

HEAD BLOCK ASSEMBLY 2"/1"



HEAD BLOCK ASSEMBLY 2" / 1"

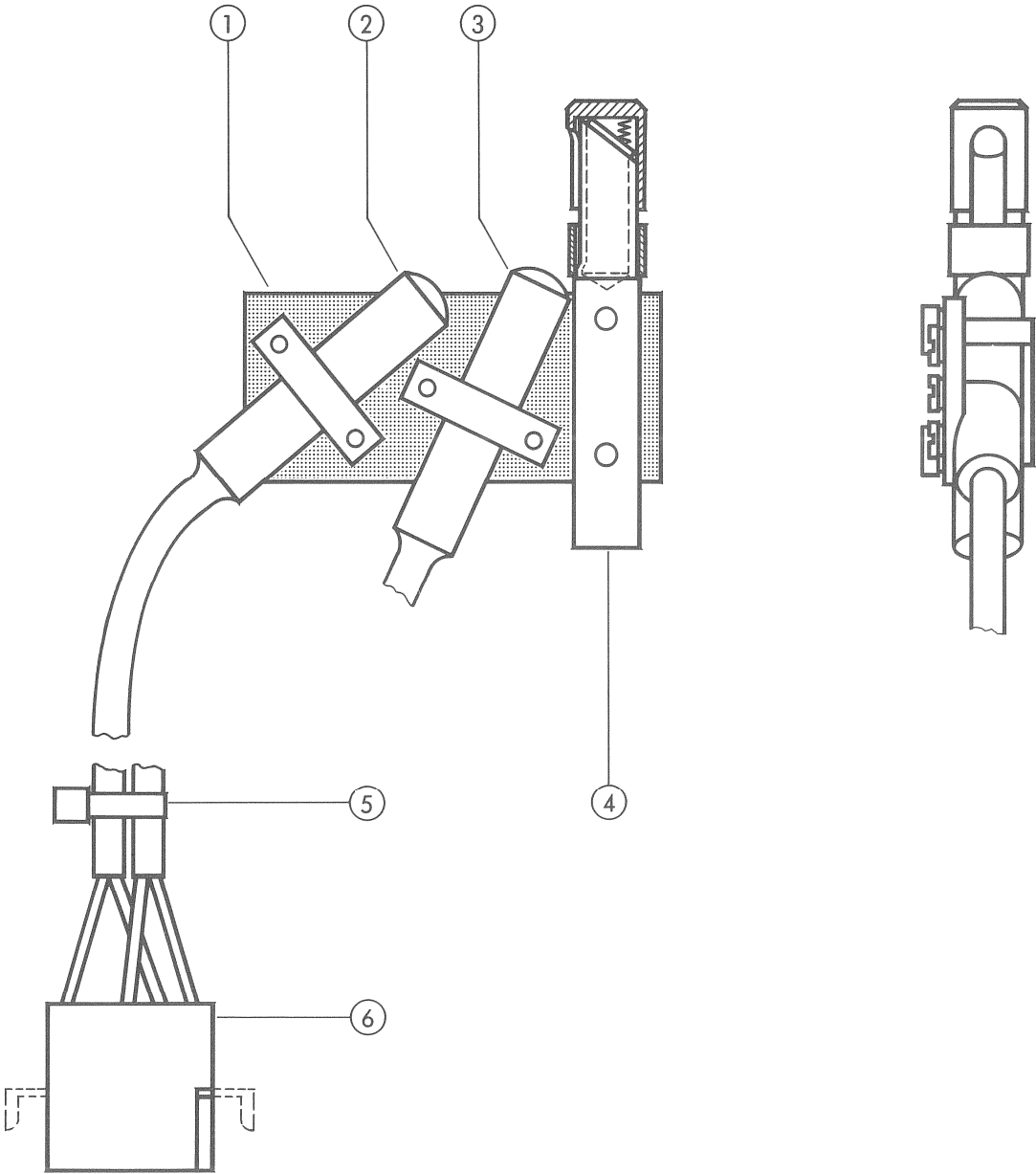
INDEX	QTY	ORDER NUMBER	BEZEICHNUNG	PART NAME
		1.020.797.81	Kopfträger 2" -24CH Eng	Head block 2" -24CH narrow
01	1	1.020.795.07	Kopfabdeckung	Head block cover
to above	2	21.51.2456	Schraube M4x10	Screw M4x10
02	1	1.020.795.15	Abschirmblech oben	Screening sheet metal (top)
03	1	1.020.793.04	Deckblech	Cover sheet
to above	2	21.51.8460	Schraube M4x20	Screw M4x20
04	1	1.020.901.81	Relaisprint kompl.	Relay p.c.b. compl.
to above	2	1.020.793.03	Distanzhülse	Spacer bush
	2	21.51.2354	Schraube M3x6	Screw M3x6
05	1	1.020.793.01	Seitenwand rechts	Lateral cover, right
to above	2	21.51.2354	Schraube M3x6	Screw M3x6
06	1	1.020.793.02	Seitenwand links	Lateral cover, left
to above	2	21.51.2354	Schraube M3x6	Screw M3x6
07	2	1.020.795.04	Stütze	Spacer mount
to above	2	21.53.0455	Schraube M4x8	Screw M4x8
	2	24.16.1040	Sicherungsscheibe	Lock washer
	1	1.020.795.08	Stütze klein	Spacer mount, small
	1	21.53.0455	Schraube M4x8	Screw M4x8
	1	24.16.1040	Sicherungsscheibe	Lock washer
08	1	1.216.825.00	Löschkopf (Inline)	Erase head (inline)
to above	1	21.53.0456	Schraube M4x10	Screw M4x10
	1	24.16.1040	Sicherungsscheibe	Lock washer
09	1	1.317.385.00	Aufnahmekopf	Record head
10	1	1.317.385.00	Wiedergabekopf	Reproduce head
to above	2	21.53.0455	Schraube M4x8	Screw M4x8
	2	24.16.1040	Sicherungsscheibe	Lock washer
11	1	1.020.795.05	Schutzblech	Protective cover
	2	21.01.0357	Schraube M3x12	Screw M3x12
	2	24.16.1030	Sicherungsscheibe	Lock washer
12	1	1.080.590.00	Zwischenberuhigungsrolle kompl.	Anti-scrape flutter roller
13	3	37.02.0107	Tellerfeder	Spring washer
14	1	1.080.580.02	6kt-Mutter spez.	Hexagonal nut, spez.
15	4	1.337.958.04	Druckfeder	Pressure spring
16	1	1.020.795.02	Abdeckplatte	Cover plate

HEAD BLOCK ASSEMBLY 2" / 1"

INDEX	QTY	ORDER NUMBER	BEZEICHNUNG	PART NAME
17	1	1.020.795.12	Abschirmklappe	Screening flap
to above	1	1.020.795.13	Abschirmblech	Screening sheet metal
	1	1.020.790.07	Keil	Wedge
	2	1.020.790.06	Lagerbolzen	Bearing bolt
	2	21.51.2354	Schrauben M3x6	Screw M3x6
18	4	1.010.018.27	Distanzhülse	Spacer bush
19	1	1.020.795.14	Abschirmblech unten	Screening sheet metal (bottom)
20	2	1.020.795.06	Justierplatte	Adjusting plate
21	4	1.020.710.03	Einstellschraube	Adjusting screw
22	4	41.01.0130	Kugel	Ball
23	2	1.020.710.05	Spez. Schraube	Screw
24	2	1.020.740.03	Bolzen	Bolt
25	2	23.01.1032	U-Scheibe	Washer
26	16	37.01.0101	Tellerfeder	Spring washer
27	2	1.010.004.27	Distanzhülse	Spacer bush
28	2	22.01.8030	6kt-Mutter M3	Hexagonal nut M3
29	1	1.020.785.30	Kopfträgerchassis kompl.	Head block chassis compl.
30	1	21.53.0462	Schraube M4x25	Screw M4x25
30	2	21.53.0464	Schraube M4x30	Screw M4x30
to above	3	24.16.1040	Sicherungsscheibe	Lock washer
31	6	54.02.1108	J 24Pol Chassis	J 24pin chassis
to above	12	21.01.0280	Schraube M2,5x8	Screw M2,5x8
	12	24.16.1025	Sicherungsscheibe	Lock washer
32	2	1.020.790.11	Blattfeder	Leaf spring
33	1	1.010.055.27	Mutterbolzen M3 x 9	Hex. bolt M3 x 9
to above	1	21.51.2354	Schraube M3x6	Screw M3x6
34	1	1.010.006.27	Distanzhülse	Spacer bush
to above	1	21.01.0372	Schraube M3x16	Screw M3x16
	1	24.16.1030	Sicherungsscheibe	Lock washer
35	1	1.010.069.27	Mutterbolzen M3 x 6	Hex. bolt M3 x 6
to above	1	21.01.0352	Schraube M3x4	Screw M3x4
	1	21.01.0354	Schraube M3x6	Screw M3x6
	2	24.16.1030	Sicherungsscheibe	Lock washer
36	1	1.020.795.16	Abschirmblech seitlich	Screening sheet metal (lateral)

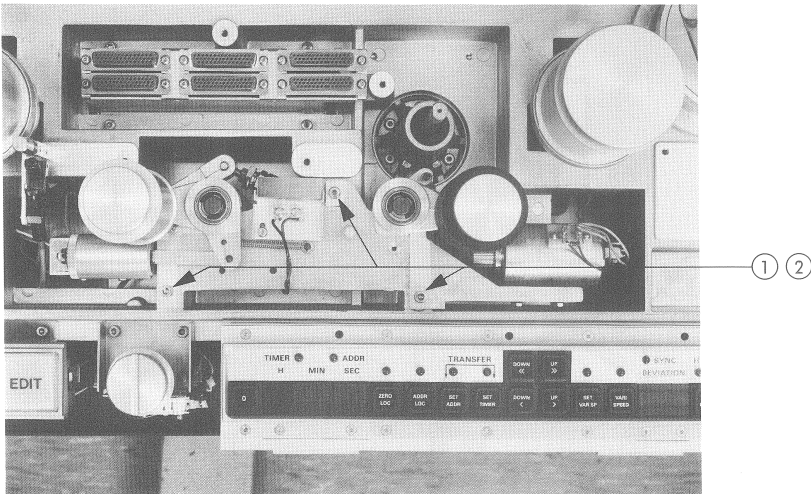
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TAPE END SWITCH 2" / 1"



[illegible]

PINCH ROLLER ASSEMBLY 2" / 1"



- AUSBAU**
- Kopfträger ausbauen.
 - Mehrfachstecker rechte Seite lösen.
 - 3 Schrauben von oben lösen.
 - Andruckaggregat vorsichtig nach oben ausfahren.

- REMOVAL**
- Remove headblock assembly.
 - Disconnect multipoint connector on right-hand.
 - Undo 3 screws from top.
 - Carefully lift out pinch roller assembly.

PFLEGEHINWEISE

Reinigung der Dämpfungspumpe:
Eloxal-Reiniger, Spiritus, Alkohol.

Befettung der Dämpfungspumpe:
Sparsam mit Fett (Klüber Q-Paste NB 50 Norm
Nr. 99.01.0502) einreiben. Nachträglich trocken
reiben.

CARE

For cleaning the dashpot:
Aluminite cleaner, methylated spirits, alcohol.

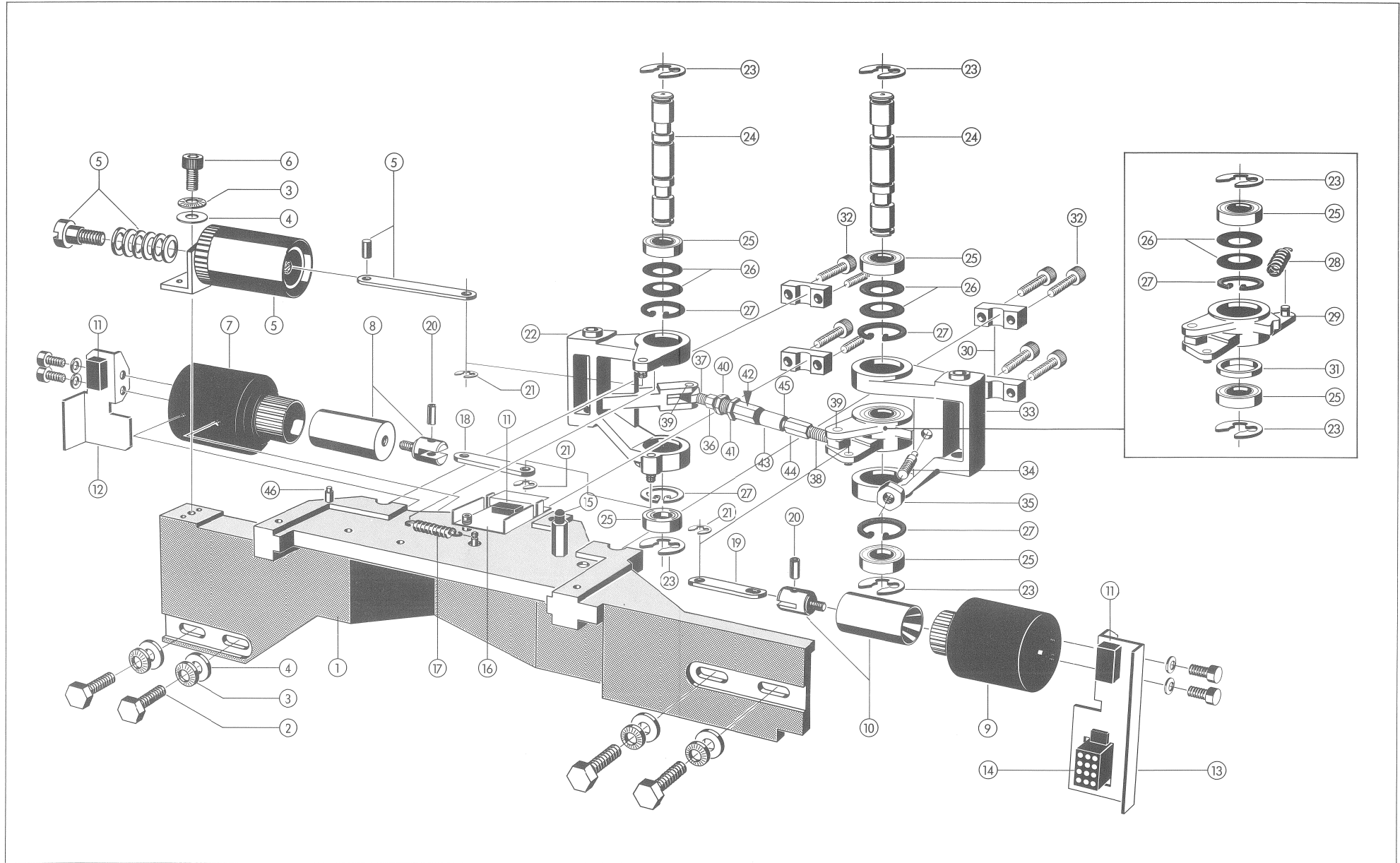
Lubrication of dashpot:
Apply a thin film of grease (Klüber Q-Paste NB 50,
standard Nr. 99.01.0502) and subsequently wipe dry.

BEFESTIGUNGSMATERIAL

MOUNTING ACCESSORIES

INDEX	QTY	ORDER NUMBER	BEZEICHNUNG	PART NAME
01	3	21.53.0461	Schraube M4 x 22	Screw M4 x 22
02	3	24.16.1040	Sicherungsscheibe	Lock washer

PINCH ROLLER ASSEMBLY 2" / 1"



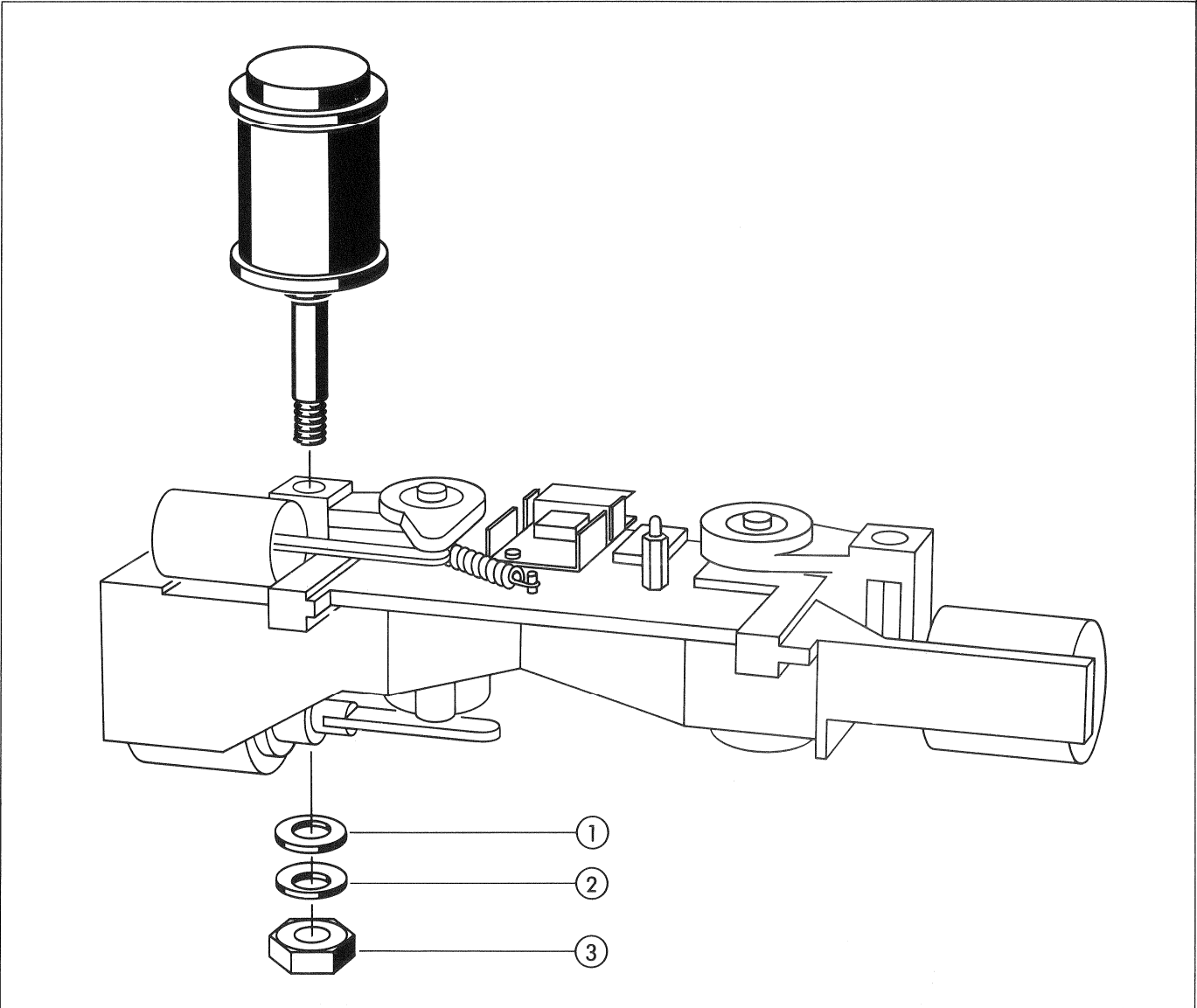
PINCH ROLLER ASSEMBLY 2" / 1"

INDEX	QTY	ORDER NUMBER	BEZEICHNUNG	PART NAME
		1.180.120.00	Andruckaggregat 2"/1"	Pinch roller assembly 2"/1"
01	1	1.080.124.01	Andruckträger	Pressure lever
02	4	21.60.4456	6-Kant Schraube M4 x 10	Hexagonal screw M4 x 10
03	13	24.16.1040	Sicherungsscheibe	Lock washer
04	4	1.010.018.23	U-Scheibe	Washer
05	1	1.080.132.00	Dämpfungspumpe kompl.	Dashpot compl.
06	1	21.53.0455	Schraube M4x8	Screw M4x8
07	1	1.014.737.00	Cuttermagnet	Cutter solenoid
08	1	1.014.739.00	Anker kompl.	Solenoid armature compl.
09	1	1.014.741.00	Andruckmagnet	Pressure solenoid
10	1	1.014.744.00	Anker kompl.	Solenoid armature compl.
11	3	55.01.0136	Mikro-Schalter	Microswitch
to above	6	1.010.016.21	Gewindebolzen M2 x 10,5	Threaded stud M2 x 10,5
	6	24.16.1020	Sicherungsscheibe	Lock washer
	6	23.01.2022	U-Scheibe	Washer
	3	1.081.010.20	Gewindeplatte	Threaded plate
12	1	1.180.120.03	Schalterträger	Switch support
to above	2	21.53.0353	Schraube M3x5	Screw M3x5
	2	24.16.1030	Sicherungsscheibe	Lock washer
13	1	1.180.120.02	Schalterträger	Switch support
to above	2	21.53.0353	Schraube M3x5	Screw M3x5
	2	24.16.1030	Sicherungsscheibe	Lock washer
14	1	54.02.0409	Kupplungsgehäuse Molex	Connector housing molex
15	1	1.180.120.07	Stütze	Support
to above	1	1.179.143.08	Knopf	Knob
	1	24.16.1030	Sicherungsscheibe	Lock washer
16	1	1.180.120.06	Wanne	Trough
to above	1	1.180.120.04	Wippe	Rocker
	1	1.180.120.05	Achse	Spindle
	2	21.53.0357	Schraube M3x12	Screw M3x12
	2	23.01.1032	U-Scheibe	Washer
	2	24.16.1030	Sicherungsscheibe	Lock washer
	2	1.010.002.27	Distanzhülse	Spacer bush
17		1.010.037.37	Zugfeder	Tension spring

PINCH ROLLER ASSEMBLY 2" / 1"

INDEX	QTY	ORDER NUMBER	BEZEICHNUNG	PART NAME
18	1	1.180.123.01	Stange genietet	Rod riveted
19	1	1.080.120.06	Stange	Rod
20	2	25.06.8356	Zylinderstift $\varnothing$ 4x10	Cylindrical pin $\varnothing$ 4x10
21	3	24.16.3023	Wellensicherung $\varnothing$ 2,3	Circlip $\varnothing$ 2,3
22	1	1.080.134.01	Vorberuhigungsarm	Stabilizer arm
23	6	24.16.3080	Wellensicherung $\varnothing$ 8	Circlip $\varnothing$ 8
24	2	1.080.126.01	Welle	Spindle
25	6	41.99.0111	Kugellager	Ball bearing
26	6	37.02.0206	Tellerfeder	Spring washer
27	5	24.16.4220	Innensicherung $\varnothing$ 22	Retaining ring, internal $\varnothing$ 22
28	1	1.080.125.04	Zugfeder	Tension spring
29	1	1.080.130.01	Andruckhebel	Pressure lever
30	4	1.080.124.02	Klemmstück	Clamp
31	1	1.080.125.05	Distanzhülse	Spacer sleeve
32	8	21.53.0472	Schraube M4x16	Screw M4x16
33	1	1.080.126.02	Andruckarm	Pressure arm
34	1	1.080.125.03	Oesenschraube	Eye screw
35	1	22.01.8040	Mutter M4	Nut M4
36	1	22.01.8050	Mutter M5	Nut M5
37	1	1.080.135.02	Gelenkstück mit Rechtsgewinde	Eye screw, right-hand thread
38	1	1.080.130.02	Gelenkstück mit Linksgewinde	Eye screw, left-hand thread
39	2	1.080.135.03	Achse	Spindle
40	1	1.080.115.04	Muffe	Collar
41	1	1.080.115.05	6-Kant Mutter M12	Hexagonal M12
42	1	1.010.056.37	Druckfeder	Pressure spring
43	1	1.080.115.03	Spannhülse	Clamping sleeve
44	1	1.080.115.01	Muffe M5 Linksgewinde	Collar M5 left handed thread
45	1	1.080.115.02	Schaftschraube M5 Linksgew.	Shank screw M5 left handed thread
46	1	1.080.120.17	Anschlagschlauch	Stop tube

STABILIZER ROLLER 2" / 1"



AUSBAU

Für den Ausbau der Vorberuhigungsrolle, muss das Andruck-
aggregat nicht ausgebaut werden.

- 1 Mutter von unten lösen.
- Vorberuhigungsrolle vorsichtig nach oben ausfahren.

REMOVAL

To remove the stabilizer roller, it is not necessary to remove
the complete pinch roller assembly

- Undo 1 nut from below.
- Remove the stabilizer roller carefully upwards.

PFLEGEHINWEISE

Reinigung der Vorberuhigungsrolle:
Eloxal-Reiniger, Spiritus, Alkohol.

CARE

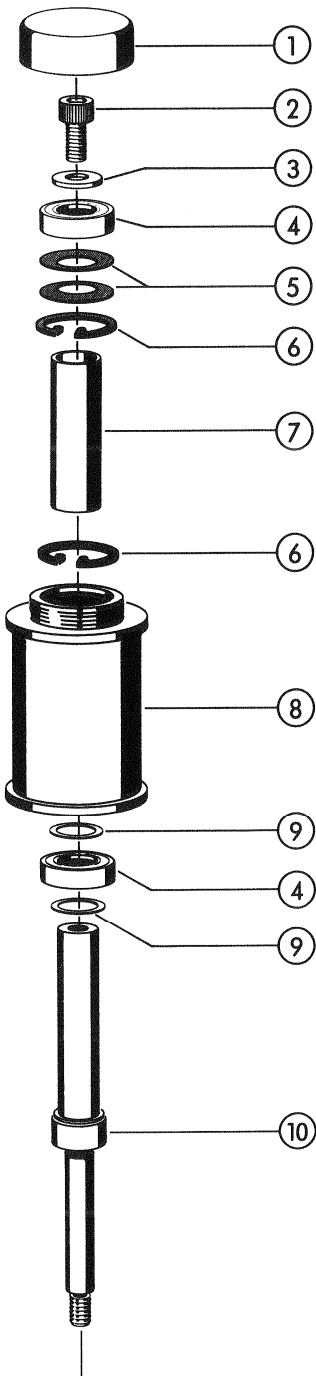
For cleaning the stabilizer roller:
Aluminite cleaner, methylated spirits, alcohol.

BEFESTIGUNGSMATERIAL

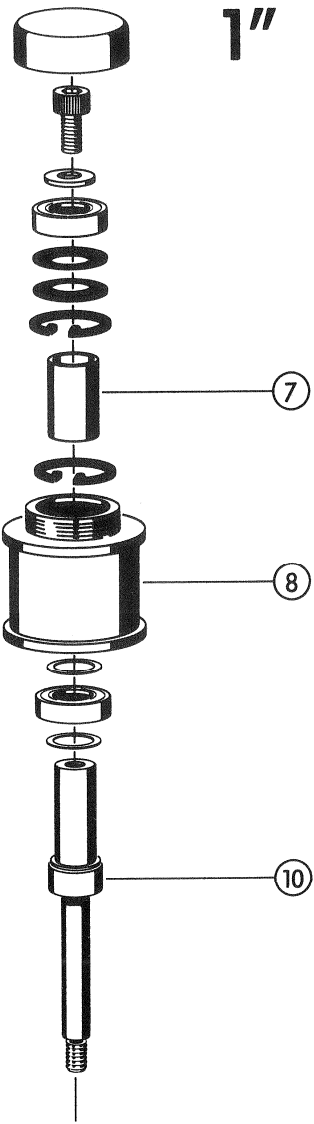
MOUNTING ACCESSORIES

INDEX	QTY	ORDER NUMBER	BEZEICHNUNG	PART NAME
01	1	24.16.1060	Sicherungsscheibe	Lock washer
02		1.080.530.06-10	Distanzscheibe	Spacer shim
03	1	22.01.8060	6-kant Mutter M6	Hexagonal nut M6

STABILIZER ROLLER 2" / 1"



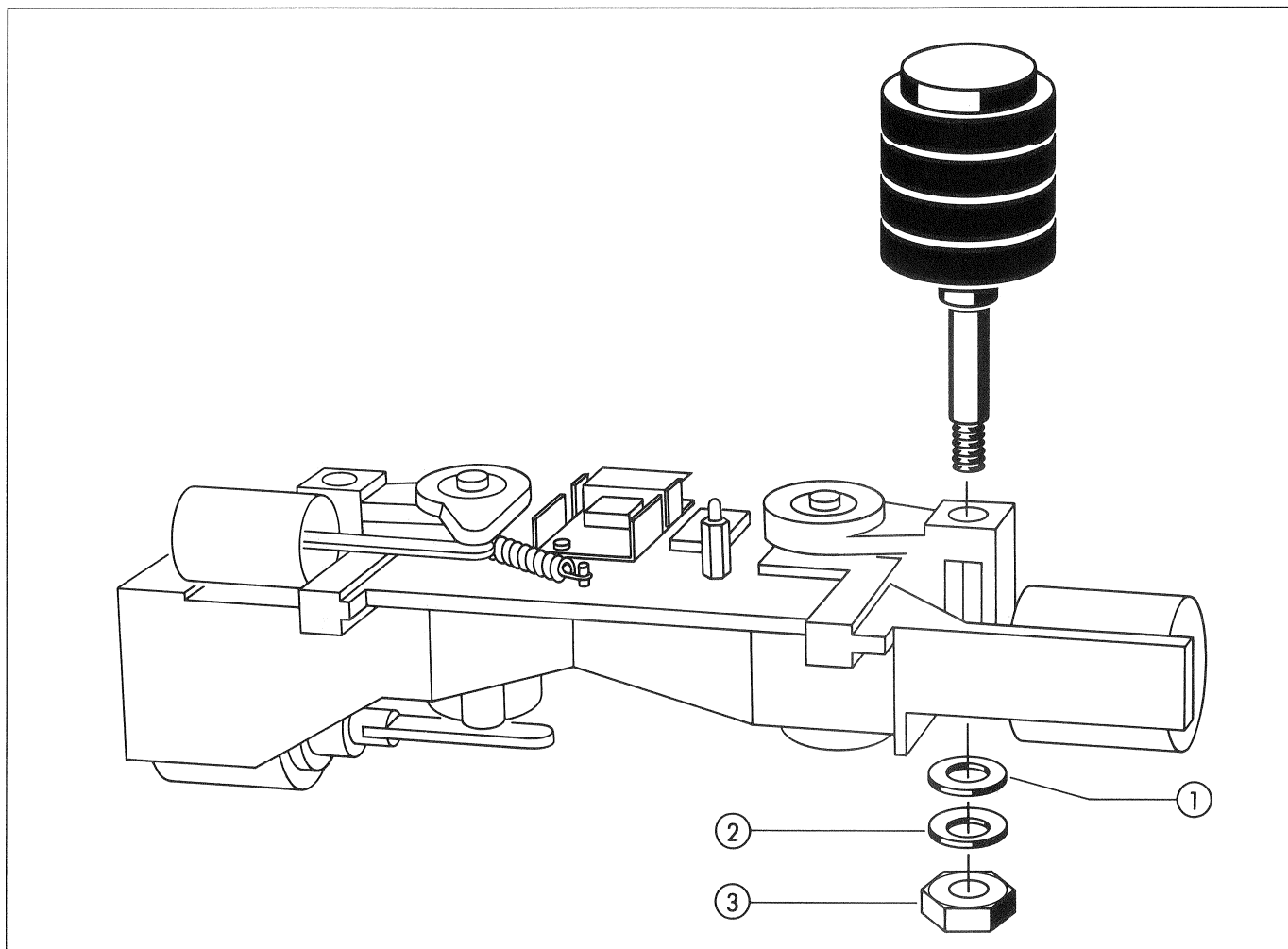
2"



1"

[illegible]

PINCH ROLLER 2" / 1"

**AUSBAU**

Für den Ausbau der Andruckrolle, muss das Andruckaggregat ausgebaut werden.

- 1 Mutter von unten lösen.
- Andruckrolle vorsichtig nach oben ausfahren.

REMOVAL

In order to remove the pinch roller, it is necessary to remove the complete pinch roller assembly.

- Undo 1 nut from below.
- Remove the pinch roller carefully upwards.

PFLEGEHINWEISE

Wenn infolge Abnutzung die Gummirollen gewechselt werden, müssen immer alle gewechselt werden.

Empfohlene Reinigungsmittel:

Spiritus, Wasser, Seifenlösung bis 70%.

Nicht zulässige Reinigungsmittel:

Lacklösemittel, Aceton, Benzin, Benzol, Chlorothen, Petroleum, Toluol, Xylol, Trichloräthylene, Perchloräthylene, chlorierte Lösungsmittel, Naphtha (Waschbenzin).

CARE

If, due to abrasion, the rubber rollers are replaced, it is necessary to replace all of them.

Recommended cleansing agents:

Methylated spirits, water, soap solution up to 70%.

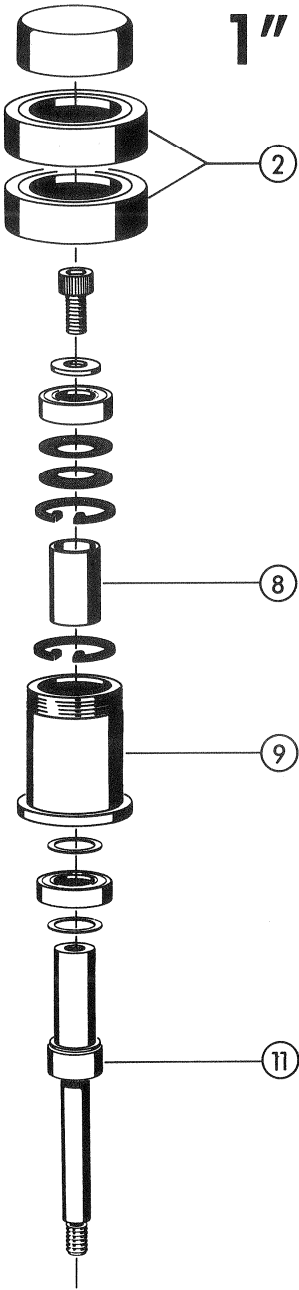
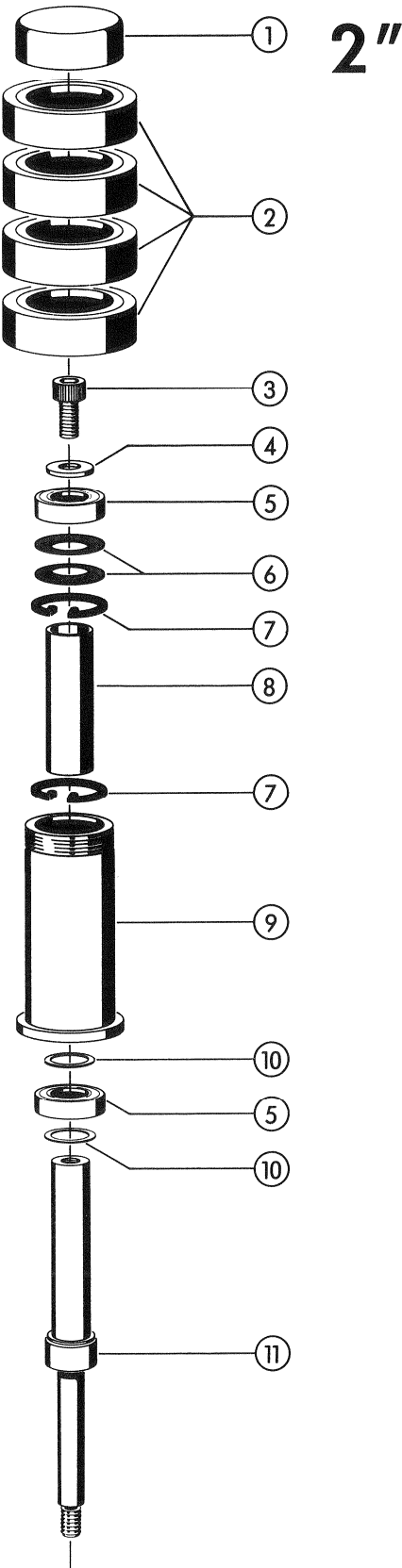
Not recommended for cleaning:

Lacquer solvents, acetone, benzine, benzene, ethylchloride, petroleum, toluene, xylene, trichloroethylene, perchloroethylene, naphtha.

BEFESTIGUNGSMATERIAL**MOUNTING ACCESSORIES**

INDEX	QTY	ORDER NUMBER	BEZEICHNUNG	PART NAME
01	1	24.16.1060	Sicherungsscheibe	Lock washer
02		1.080.530.06-10	Distanzscheibe	Spacer shim
03	1	22.01.8060	6-kant Mutter M6	Hexagonal nut M6

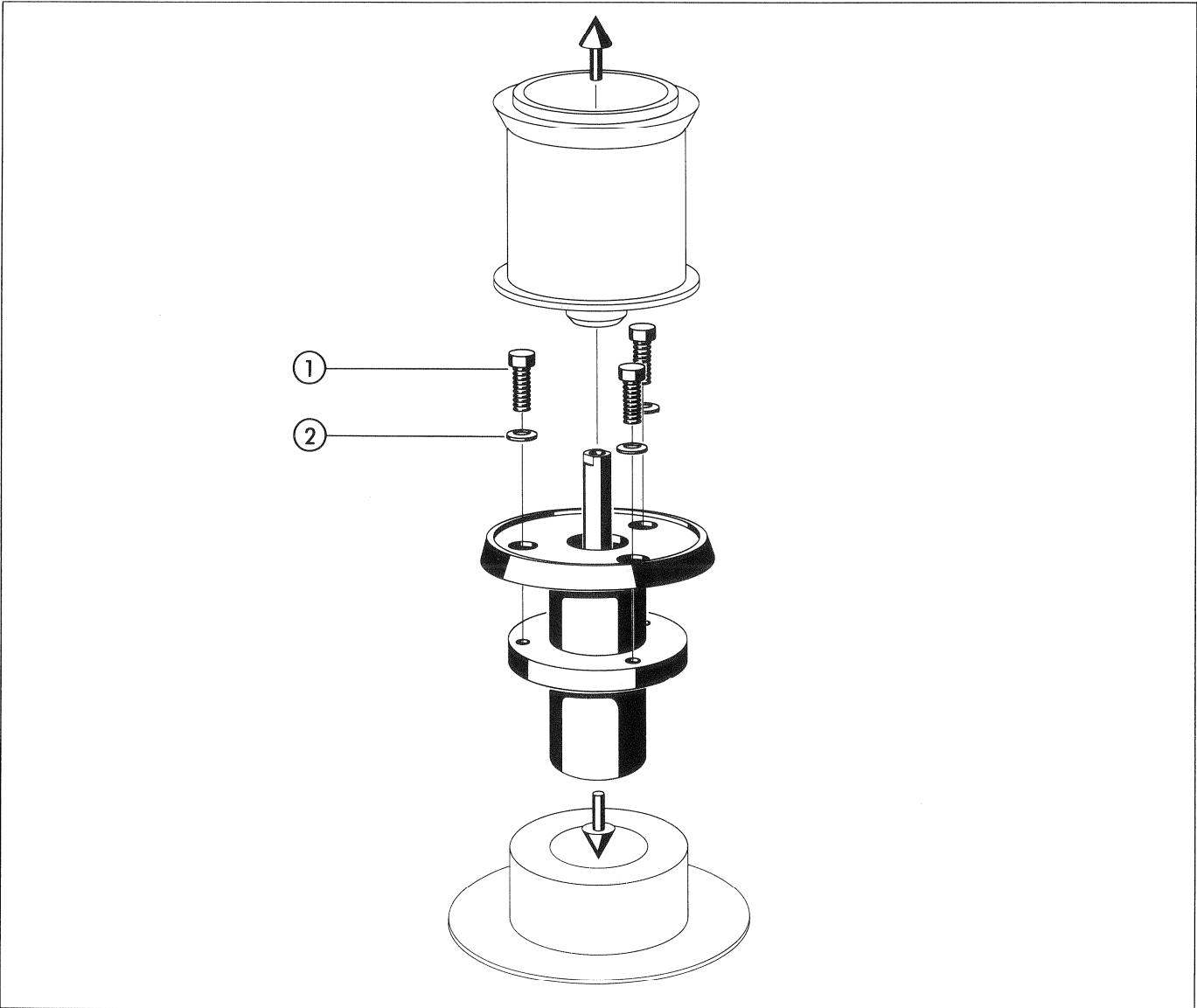
PINCH ROLLER 2" / 1"



PINCH ROLLER 2" / 1"

[illegible]

GUIDE ROLLER LEFT 2" / 1"



AUSBAU

- Permanentmagnet ausbauen, 2 Schrauben von unten lösen.
- Kontermutter an der Schwunghmassenachse lösen.
- Schwungmasse mit Scheibe ausfahren.
- Bandumlenkrolle ausbauen (1 Schraube lösen)
- Lagerflansch ausbauen (3 Schrauben lösen).

REMOVAL

- Dismantle permanent magnet, loosen 2 screws from below.
- Undo lock nut of flywheel axle.
- Slide out flywheel mass together with disk.
- Dismantle guide roller (1 screw).
- Dismantle bearing flange (3 screws).

PFLEGEHINWEISE

Reinigung der Umlenkrolle:
Eloxal-Reiniger, Spiritus, Alkohol.

CARE

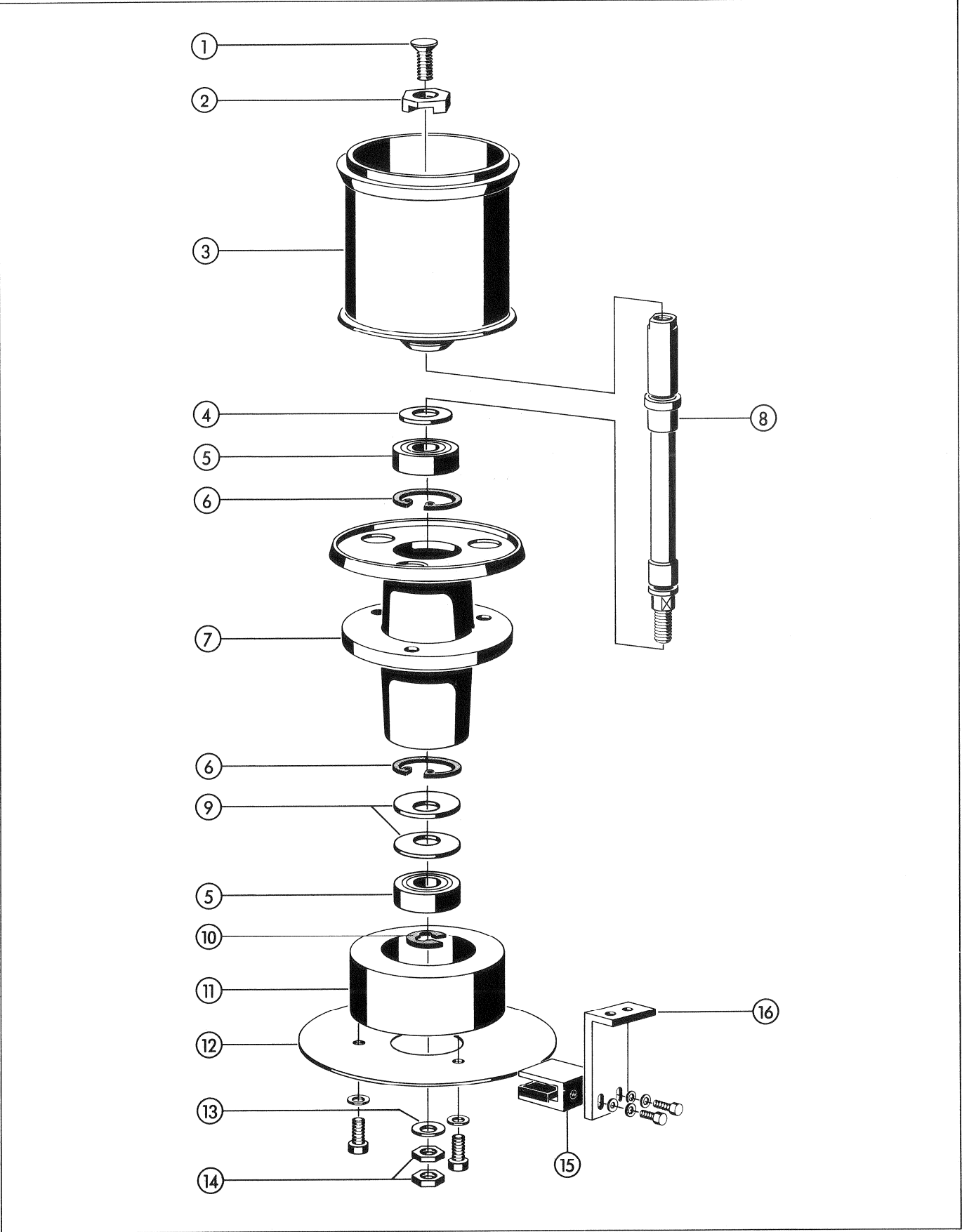
For cleaning the guide roller:
Aluminite cleaner, methylated spirits, alcohol.

BEFESTIGUNGSMATERIAL

MOUNTING ACCESSORIES

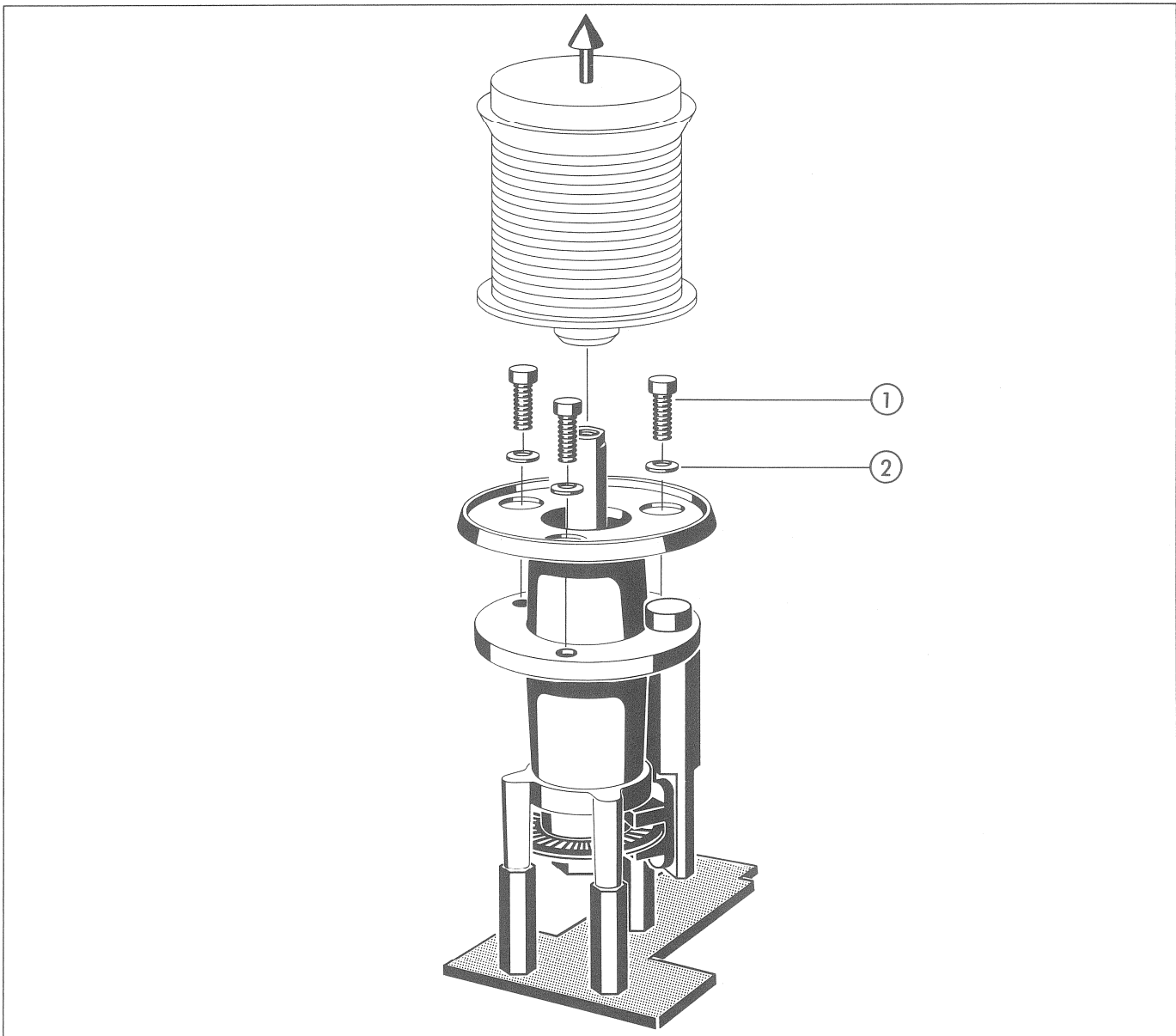
INDEX	QTY	ORDER NUMBER	BEZEICHNUNG	PART NAME
01	3	21.53.0457	Schraube Z,IS M4 x 12	Screw Z,IS M4 x 12
02	3	24.16.1040	Sicherungsscheibe	Lock washer

GUIDE ROLLER LEFT 2" / 1"



[illegible]

MOVE SENSOR 2" / 1"



AUSBAU

- Deckel senkrecht nach oben abziehen.
- Bandumlenkrolle ausbauen, 1 Schraube lösen.
- Mehrfachstecker von unten lösen.
- 3 Schrauben von oben lösen.
- Bandumlenkrolle vorsichtig nach oben ausfahren.

REMOVAL

- Remove cover by pulling towards top.
- Remove guide roller (1 screw).
- Disconnect multipoint connector from below.
- Undo 3 screws from top.
- Carefully slide out guide roller through the top.

PFLEGEHINWEISE

Reinigung des Bandabtasters:
Eloxal-Reiniger, Spiritus, Alkohol.

CARE

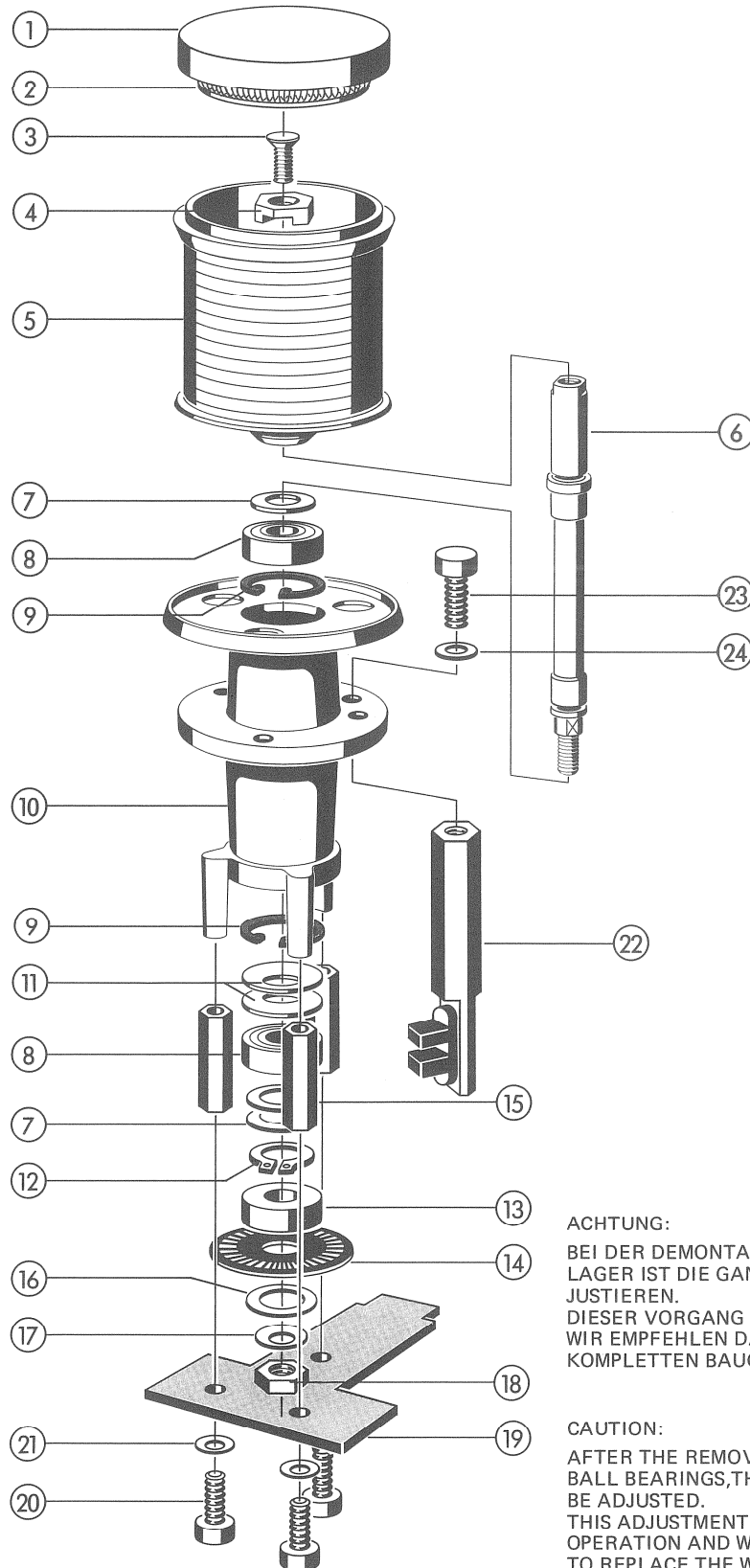
For cleaning the move sensor:
Aluminite cleaner, methylated spirits, alcohol.

BEFESTIGUNGSMATERIAL

MOUNTING ACCESSORIES

INDEX	QTY	ORDER NUMBER	BEZEICHNUNG	PART NAME
01	3	21.53.0457	Schraube M4 x 12	Screw M4 x 12
02	3	24.16.1040	Sicherungsscheibe	Lock washer

MOVE SENSOR 2" / 1"



ACHTUNG:

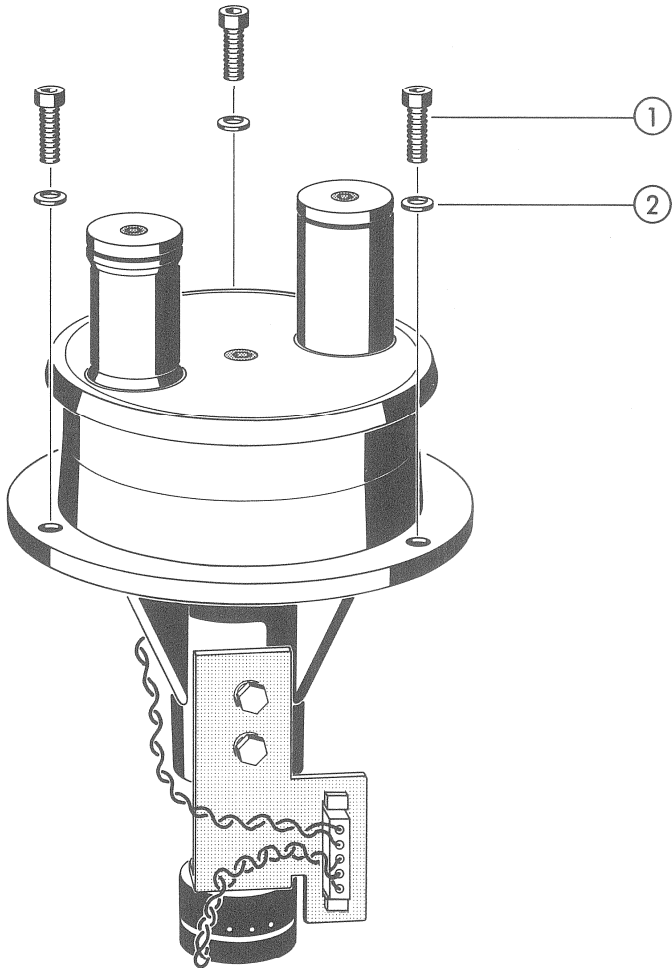
BEI DER DEMONTAGE/MONTAGE DER KUGEL-
LAGER IST DIE GANZE BAUGRUPPE NEU ZU
JUSTIEREN.
DIESER VORGANG IST SEHR DELIKAT!
WIR EMPFEHLEN DAHER DEN AUSTAUSCH DER
KOMPLETTEN BAUGRUPPE.

CAUTION:

AFTER THE REMOVAL OR THE SETTING OF THE
BALL BEARINGS, THE WOHLER ASSEMBLY HAS TO
BE ADJUSTED.
THIS ADJUSTMENT IS A VERY DELICATE
OPERATION AND WE RECOMMEND THEREFOR
TO REPLACE THE WOHLER ASSEMBLY.

[illegible]

TAPE TENSION SENSOR LEFT / RIGHT 2" / 1"



AUSBAU

- Rollenteller der Bandzugwaage ausbauen, 1 Schraube lösen.
- Federdämpfungselement ausbauen.
- Mehrfachstecker lösen.
- 3 Schrauben von oben lösen.
- Bandzugwaage vorsichtig nach oben ausfahren.

REMOVAL

- Remove roller turntable of the tape tension sensor, (undo 1 screw).
- Remove spring damping unit.
- Disconnect multipoint connector.
- Undo 3 screws from the top.
- Remove it carefully upwards.

PFLEGEHINWEISE

Reinigung der Bandzugwaage:
Eloxal-Reiniger, Spiritus, Alkohol.

CARE

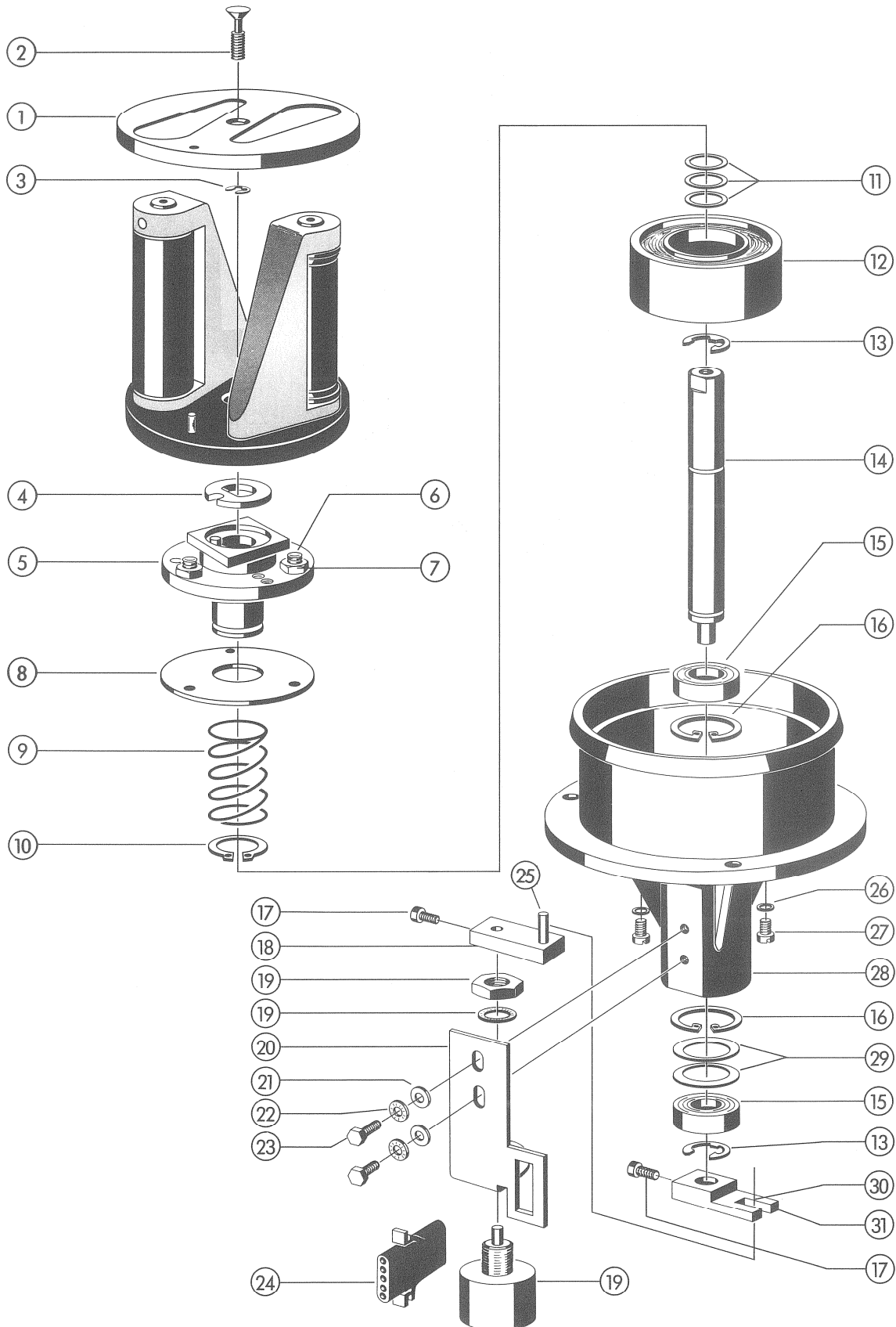
For cleaning the tape tension sensor:
Aluminite cleaner, methylated spirits, alcohol.

BEFESTIGUNGSMATERIAL

MOUNTING ACCESSORIES

INDEX	QTY	ORDER NUMBER	BEZEICHNUNG	PART NAME
01	3	21.53.0457	Schraube M4 x 12	Screw M4 x 12
02	3	24.16.1040	Sicherungsscheibe	Lock washer

TAPE TENSION SENSOR LEFT / RIGHT 2" / 1"



TAPE TENSION SENSOR LEFT / RIGHT 2" / 1"

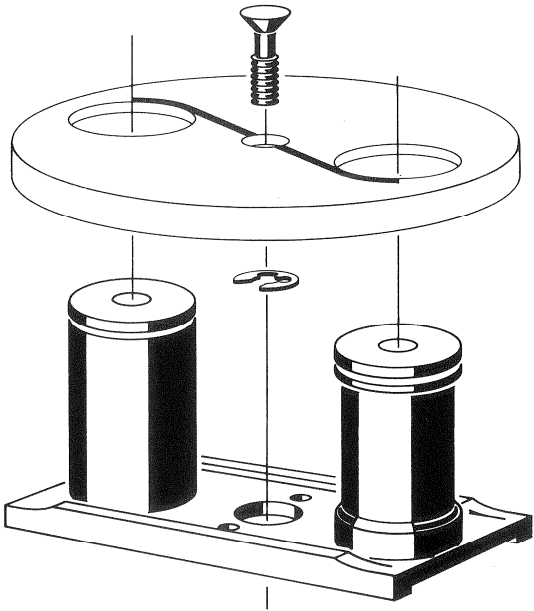
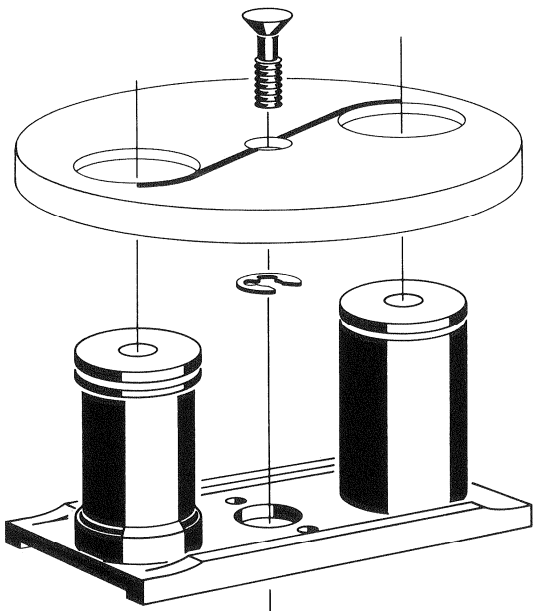
INDEX	QTY	ORDER NUMBER	BEZEICHNUNG	PART NAME
01	1	1.180.142.02	Deckel rechts 2"	Cover right 2"
		1.080.146.01	Deckel graviert rechts 1"	Engraved cover right 1"
		1.180.146.01	Deckel links 2"	Cover left 2"
		1.080.142.12	Deckel graviert links 1"	Engraved cover left 1"
02	1	1.080.142.10	Senkschraube spez.	Countersunk screw spec.
03	1	24.16.3032	Wellensicherung	Circlip
		1.180.146.00	Bandzugwaage rechts	Tape tension sensor right
		1.180.142.00	Bandzugwaage links	Tape tension sensor left
04	1	1.080.142.11	Mitnehmerscheibe	Coupling washer
05	1	1.180.148.00	Blockierrolle kompl.	Lock wheel armature hub
06	3	1.080.142.03	Gewindestift mit Zapfen M4	Threadet pin with pivot M4
07	3	22.01.5040	6Kt-Mutter M4	Hex. nut M4
08	1	1.080.142.02	Blockierscheibe	Lock washer
09	1	1.080.142.04	Druckfeder	Pressure spring
10	1	24.16.5160	Aussensicherung	Retaining ring external
11		1.080.530.06-10	Distanzscheibe	Spacer shim
12	1	1.080.153.00	Haltemagnet kompl.	Solenoid compl.
13	2	24.16.3080	Wellensicherung	Circlip
14	1	1.080.142.07	Achse	Spindle
15	2	41.99.0111	Kugellager	Ball bearing
16	2	24.16.4220	Innensicherung	Retaining ring internal
17	2	21.53.0354	Schraube Z,IS M3 x 6	Screw Z,IS M3 x 6
18	1	1.080.142.08	Mitnehmer zu Bandwaage	Coupling lever
19	1	58.99.0110	Potentiometer mit Mutter	Potentiometer with nut
20	1	1.080.142.06	Winkel	Angle bracket
21	2	23.01.2043	U-Scheibe	Washer
22	2	24.16.1040	Sicherungsscheibe	Lock washer
23	2	21.60.4455	6Kt-Schraube M4 x 8	Hex. screw M4 x 8
24	1	54.02.0403	Kupplungsgehäuse Molex	Connector housing molex
25	1	25.06.8208	Zyl. - Stift	Cylindrical pin
26	3	24.16.1030	Sicherungsscheibe	Lock washer
27	3	21.53.0354	Schraube Z,IS M3 x 6	Screw Z,IS M3 x 6
28	1	1.080.150.00	Flansch kompl.	Bearing housing compl.

[illegible]

TAPE TENSION SENSOR ROLLERS 1"

LEFT-HAND SIDE

RIGHT-HAND SIDE



AUSBAU

- Rollenteller der Bandzugwaage ausbauen (1 Schraube lösen).
- Rollenbrücke nach oben ausfahren.

REMOVAL

- Remove roller turntable from the tape tension sensor (undo 1 screw).
- Remove the roller unit upwards.

PFLEGEHINWEISE

Reinigung der Rollenbrücke:
Eloxal-Reiniger, Spiritus, Alkohol.

CARE

For cleaning the roller unit:
Aluminite cleaner, methylated spirits, alcohol.

BEFESTIGUNGSMATERIAL

MOUNTING ACCESSORIES

INDEX	QTY	ORDER NUMBER	BEZEICHNUNG	PART NAME
			keine	no

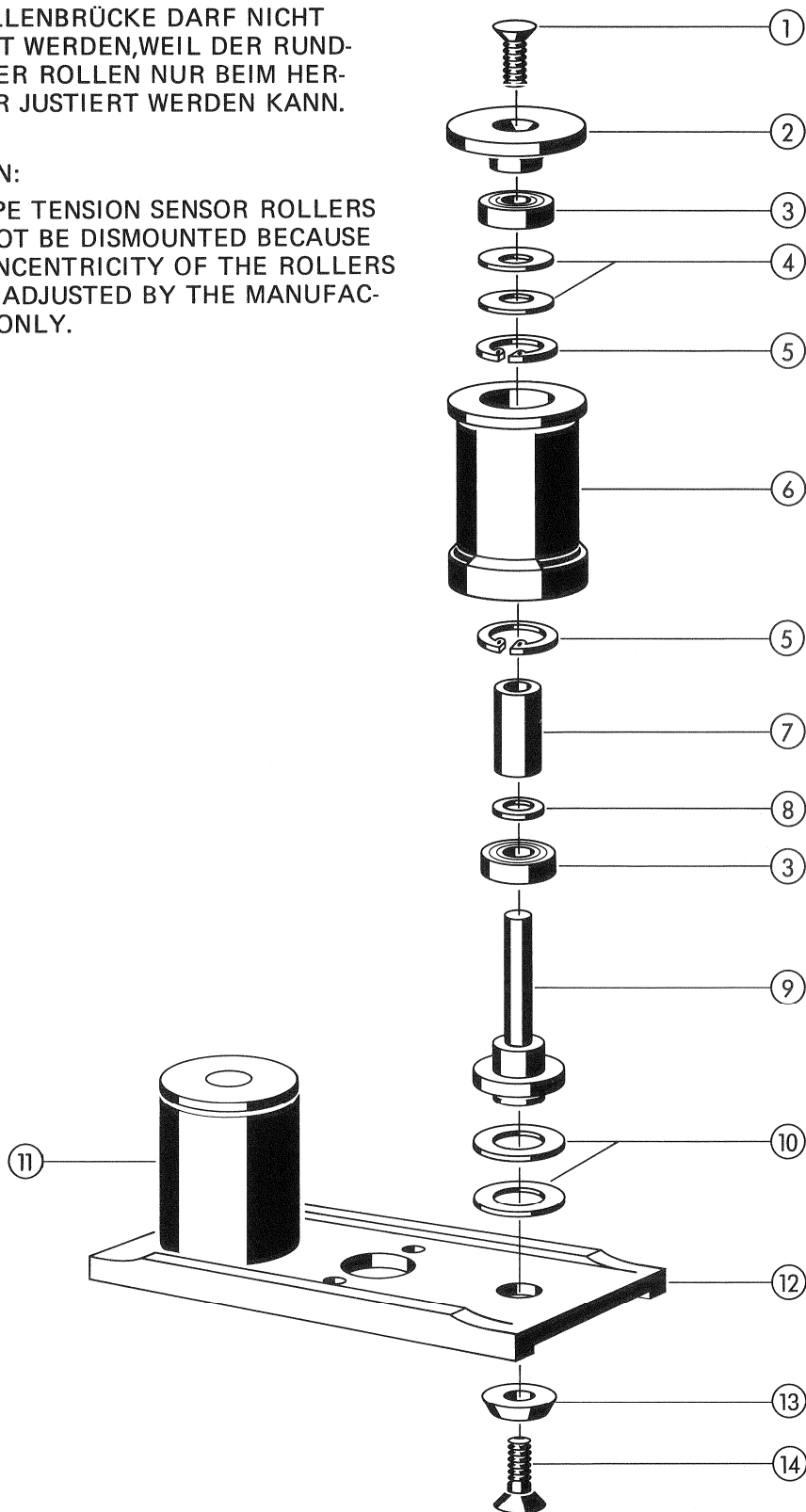
TAPE TENSION SENSOR ROLLERS 1"

ACHTUNG:

DIE ROLLENBRÜCKE DARF NICHT ZERLEGT WERDEN, WEIL DER RUNDLAUF DER ROLLEN NUR BEIM HERSTELLER JUSTIERT WERDEN KANN.

CAUTION:

THE TAPE TENSION SENSOR ROLLERS MUST NOT BE DISMOUNTED BECAUSE THE CONCENTRICITY OF THE ROLLERS CAN BE ADJUSTED BY THE MANUFACTURER ONLY.



[illegible]

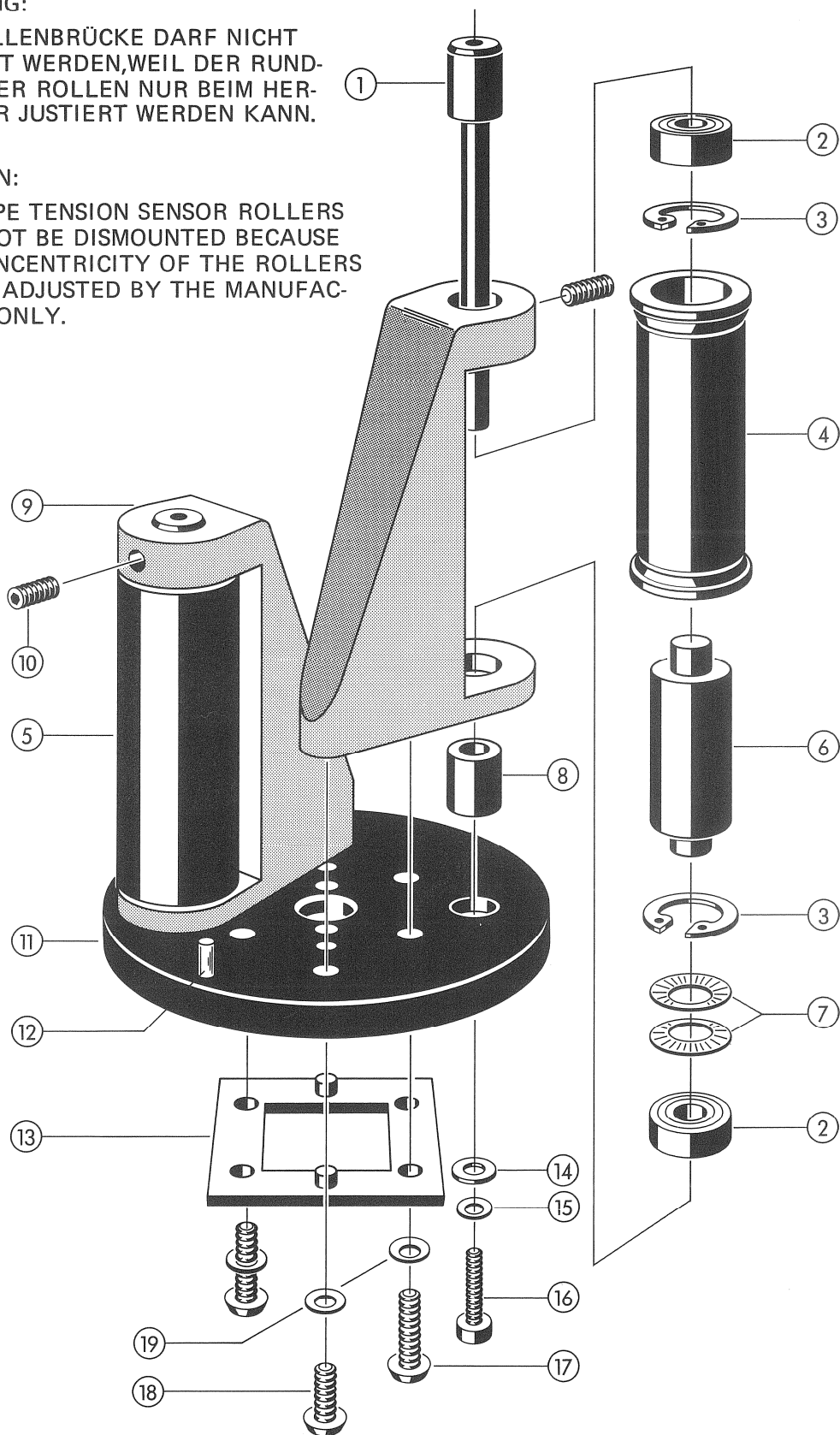
TAPE TENSION SENSOR ROLLERS 2"

ACHTUNG:

DIE ROLLENBRÜCKE DARF NICHT
ZERLEGT WERDEN, WEIL DER RUND-
LAUF DER ROLLEN NUR BEIM HER-
STELLER JUSTIERT WERDEN KANN.

CAUTION:

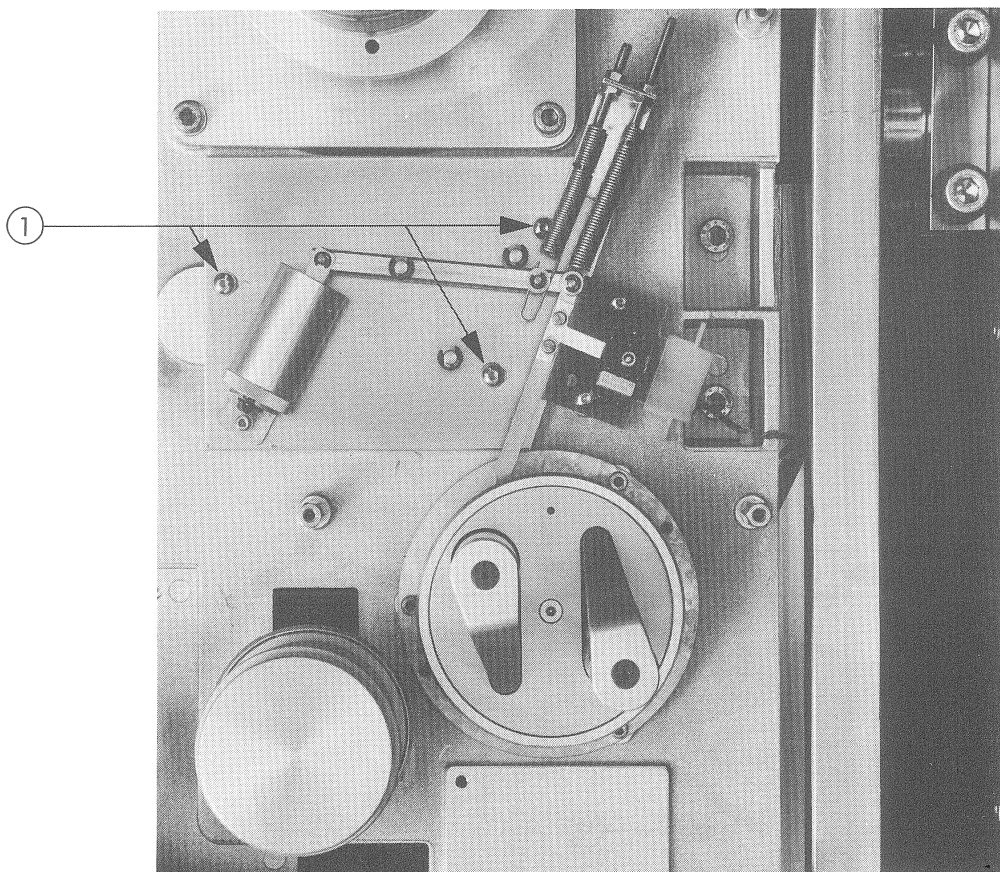
THE TAPE TENSION SENSOR ROLLERS
MUST NOT BE DISMOUNTED BECAUSE
THE CONCENTRICITY OF THE ROLLERS
CAN BE ADJUSTED BY THE MANUFAC-
TURER ONLY.



TAPE TENSION SENSOR ROLLERS 2"

[illegible]

DASHPOT ASSEMBLY 2" / 1"

**AUSBAU**

- Rollenteller der Bandzugwaage ausbauen, 1 Schraube lösen.
- Kupplung zum Federgestänge lösen (2 Schrauben).
- Dämpfungselement ausbauen, 3 Schrauben lösen.
- Dämpfungselement vorsichtig drehen und den Spreng-ring an der Kupplung entfernen.
- Federdämpfungselement ausfahren.

REMOVAL

- Remove roller turntable from spring and tension sensor, (undo 1 screw).
- Disconnect clutch to spring and damping unit, (undo 2 screws).
- Undo the 3 screws holding the spring and damping unit.
- Turn unit (carefully !) over and remove circlips from the clutch.
- Remove spring and damping unit.

PFLEGEHINWEISE

Reinigung der Dämpfungspumpe:
Eloxal-Reiniger, Spiritus, Alkohol.

Befettung der Dämpfungspumpe:
Sparsam mit Fett (Klüber Q-Paste NB 50 Norm Nr. 99.01.0502) einreiben. Nachträglich trocken reiben.

CARE

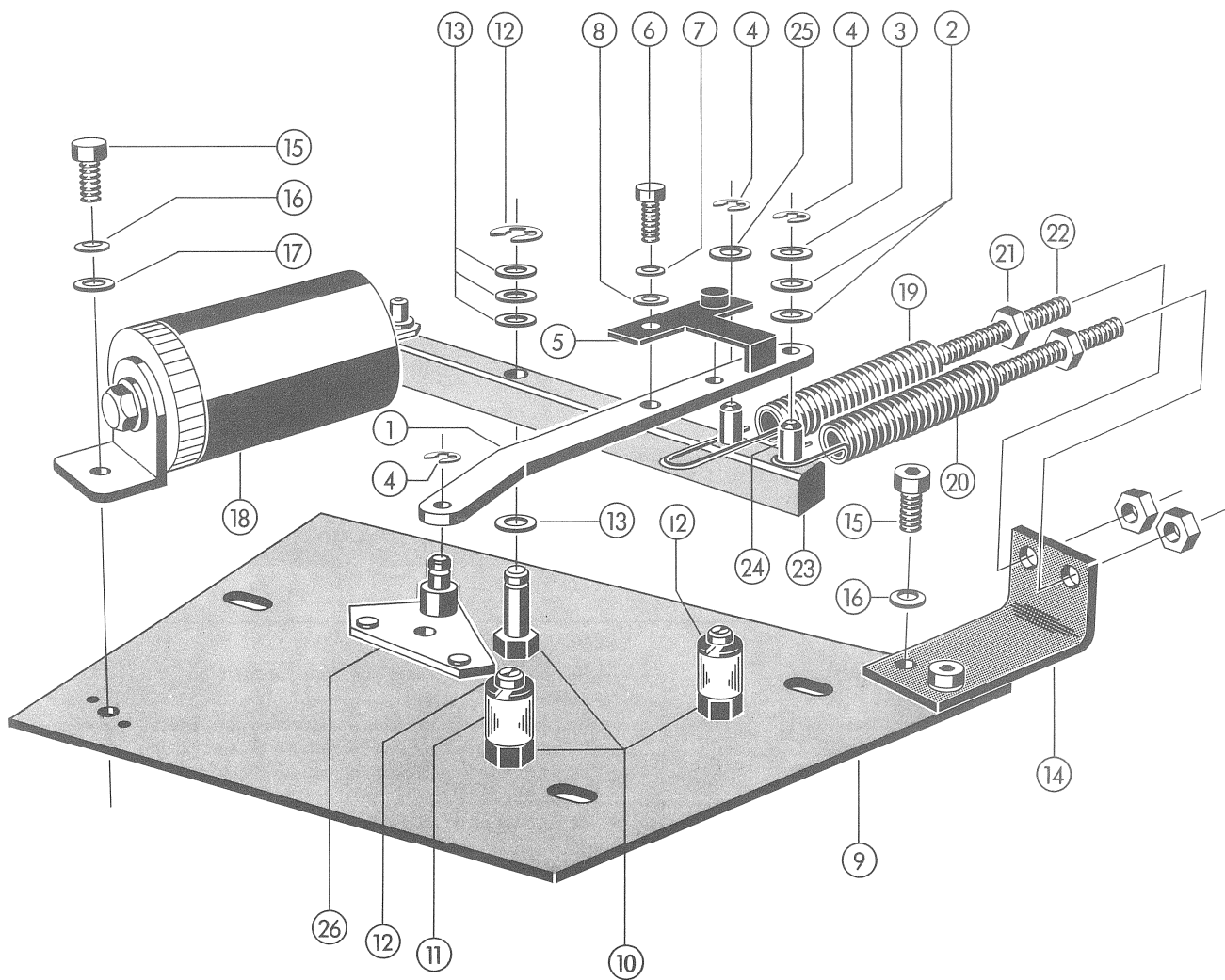
For cleaning the dashpot:
Aluminite cleaner, methylated spirits, alcohol.

Lubrication of dashpot:
Apply a thin film of grease (Klüber Q-Paste NB 50, standard Nr. 99.01.0502) and subsequently wipe dry.

BEFESTIGUNGSMATERIAL**MOUNTING ACCESSORIES**

INDEX	QTY	ORDER NUMBER	BEZEICHNUNG	PART NAME
01	3	21.51.8455	Schraube Lin , IS M4 x 8	Screw Lin , IS M4 x 8
to above	3	24.16.1040	Sicherungsscheibe	Lock washer
	3	23.01.2043	U - Scheibe	Washer

DASHPOT ASSEMBLY 2" / 1"

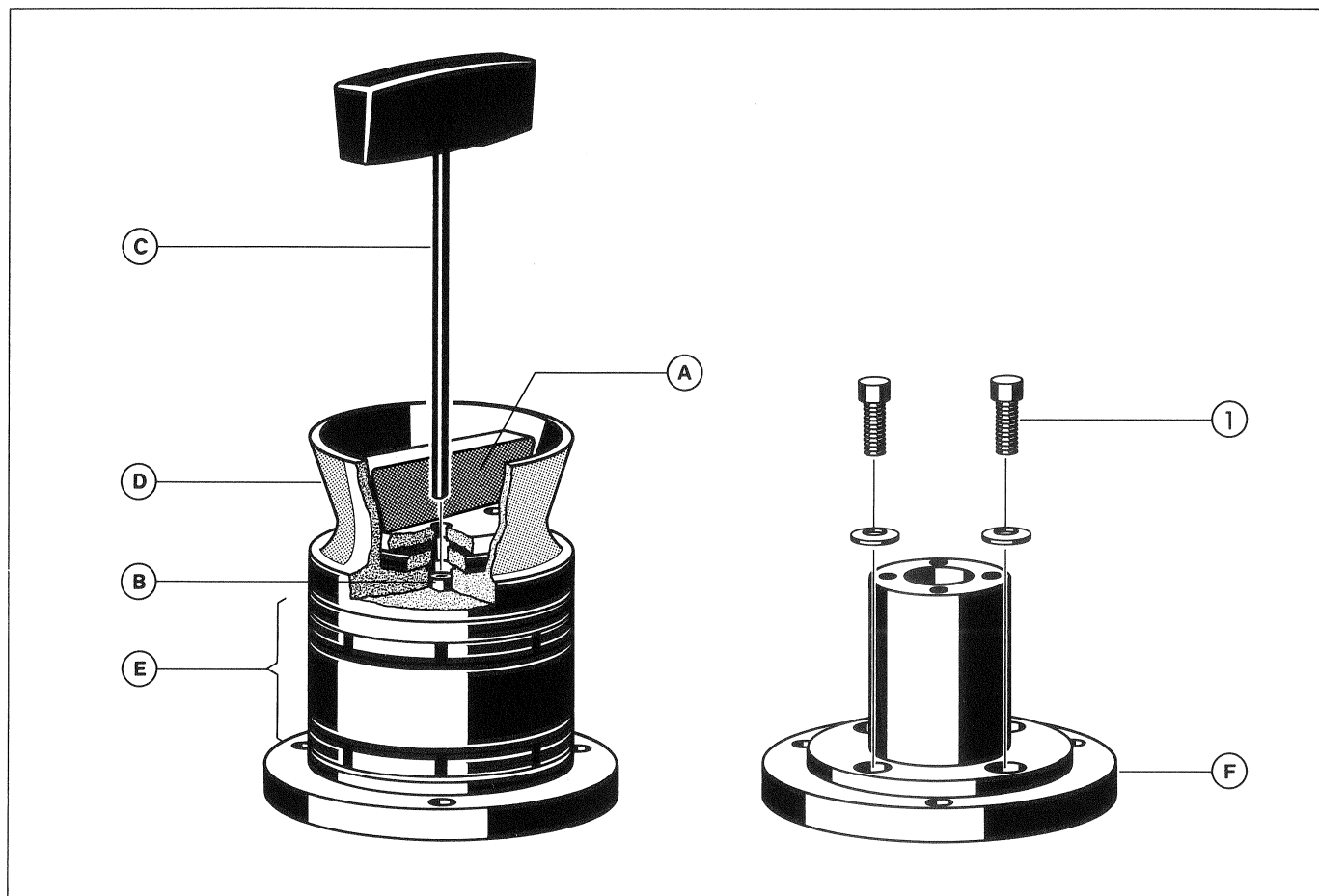


DASHPOT ASSEMBLY 2" / 1"

INDEX	QTY	ORDER NUMBER	BEZEICHNUNG	PART NAME
01	1	1.180.100.64	Stange	Rod
02	2	23.01.3032	U-Scheibe $\varnothing 3,2/9 \times 0,8$	Washer $\varnothing 3,2/9 \times 0,8$
03	1	23.01.2032	U-Scheibe $\varnothing 3,2/7 \times 0,5$	Washer $\varnothing 3,2/7 \times 0,5$
04	3	24.16.3023	Wellensicherung	Circlip
05	1	1.180.100.63	Winkel	Bracket
06	2	21.01.0279	Schraube Z,IS M2.5 x 6	Screw Z,IS M2.5 x 6
07	2	24.16.1025	Sicherungsscheibe	Lock washer
08	2	23.01.1027	U-Scheibe	Washer
		1.180.220.00	Bandzugfeder kompl. 2" links	Spring assembly compl. 2" left
09	1	1.180.210.01	Platte links	Plate left
10	3	1.180.235.02	Lagerbolzen	Support bolt
to above	3	21.51.2354	Schraube Z,IS M3 x 6	Screw Z,IS M3 x 6
11	2	1.180.235.05	Gummischlauch	Rubber hose
12	3	24.16.3040	Wellensicherung	Circlip
13	4	1.062.101.09	Distanzscheibe	Spacer shim
14	1	1.180.210.02	Einstellwinkel	Adjusting bracket
15	3	21.53.0353	Schraube Z,IS M3 x 5	Screw Z,IS M3 x 5
16	3	24.16.1030	Sicherungsscheibe	Lock washer
17	1	23.01.2032	U-Scheibe	Washer
18	1	1.180.166.00	Dämpfungsdose kompl.	Silicone dashpot compl.
19	1	1.180.220.02	Zugfeder 2"	Tension spring 2"
20	1	1.180.220.01	Zugfeder 2"	Tension spring 2"
21	4	22.01.8040	6-Kant. Mutter M4	Hex. nut M4
22	2	1.180.210.08	Einstellschraube	Adjusting screw
23	1	1.180.210.03	Hebel	Lever
24	2	1.180.210.04	Gelenkbolzen	Linkage bolt
25	1	23.01.3032	U-Scheibe	Washer
26	1	1.180.158.00	Verbindungsplatte mit Bolzen	Interconnecting plate with bolt
		1.180.221.00	Bandzugfeder kompl. 2" rechts	Spring assembly compl. 2" right
			wie 2" links ausser:	like 2" left except:
09	1	1.180.211.01	Platte rechts	Plate right

[illegible]

ADAPTER 2" / 1"



AUSBAU

ACHTUNG:

Vor jeder Arbeit am Adapter muss die Maschine ausgeschaltet werden!

- Den Schraubgriff(A) des Adapters soweit drehen, bis durch die 4 Bohrungen desselben die darunter liegenden 4 Inbusschrauben(B) sichtbar werden.
- Durch den Schraubgriff hindurch die 4 Inbusschrauben mit einem Inbusschlüssel 3mm(C) wechselseitig lösen und den oberen Teil(D) des Adapters abnehmen.
- Die 7 äusseren Teile(E) des Adapters nach oben abziehen.
- Die 4 sichtbar werdenden Inbusschrauben(1) lösen und das Tragelement(F) nach oben abziehen.

REMOVAL

CAUTION:

Before servicing the adapters, switch off the recorder!

- Turn screwgrip(A) of the adapter until you can see the 4 allenscrews(B) through the 4 holes.
- Unscrew the 4 allenscrews by slipping the allenkey 3mm(C) through the 4 holes.
- Remove the upper part of the adapter(D).
- Slip off vertically the 7 outer parts(E) of the adapter.
- Unscrew the 4 allenscrews(1) now visible and slip off vertically the support(F).

PFLEGEHINWEISE

Reinigung des Adapters:
Eloxal-Reiniger, Spiritus, Alkohol.

CARE

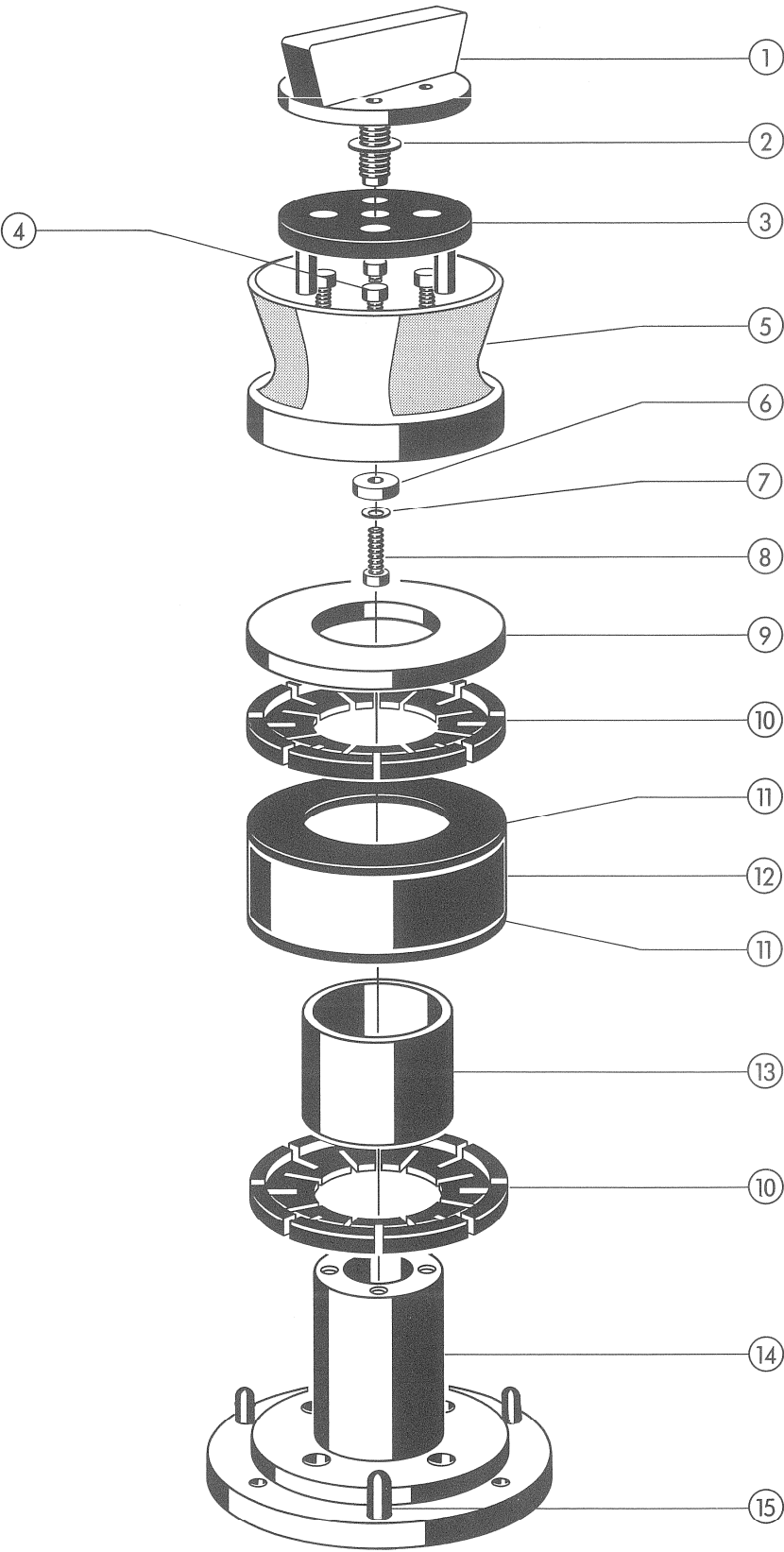
For cleaning the adapter:
Aluminite cleaner, methylated spirits, alcohol.

BEFESTIGUNGSMATERIAL

MOUNTING ACCESSORIES

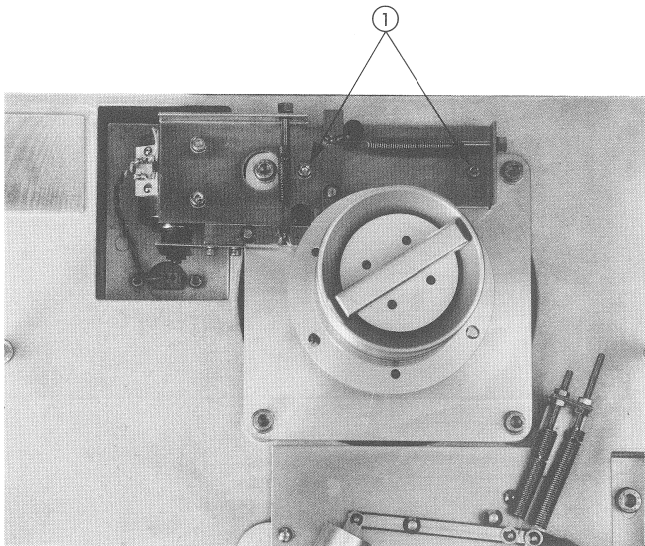
INDEX	QTY	ORDER NUMBER	BEZEICHNUNG	PART NAME
01	4	21.53.0461	Schraube IS, M4 x 22	Screw IS, M4 x 22
to above	4	24.16.1040	Sicherungsscheibe	Lock washer

ADAPTER 2" / 1"



[illegible]

BRAKES 2" / 1"



AUSBAU

- Adapter ausbauen (siehe section 9/47)
- Mehrfachstecker lösen.
- 2 Schrauben von oben lösen.
- Bremse vorsichtig nach oben ausfahren.

REMOVAL

- Remove the Adapter (see section 9/47)
- Disconnect multipoint connector.
- Undo 2 screws from the top.
- Remove the brake carefully upwards.

PFLEGEHINWEISE

Bremständer und Bremsrolle mit in Spiritus getränktem Baumwollappen reinigen. Die Bremsflächen dürfen nach der Reinigung nicht mehr berührt werden.

CARE

Clean brake bands and brake roller with cotton swab moistened with methylated spirits. Do not touch brake surfaces after they have been cleaned.

Achtung:
Chloroform nicht geeignet.

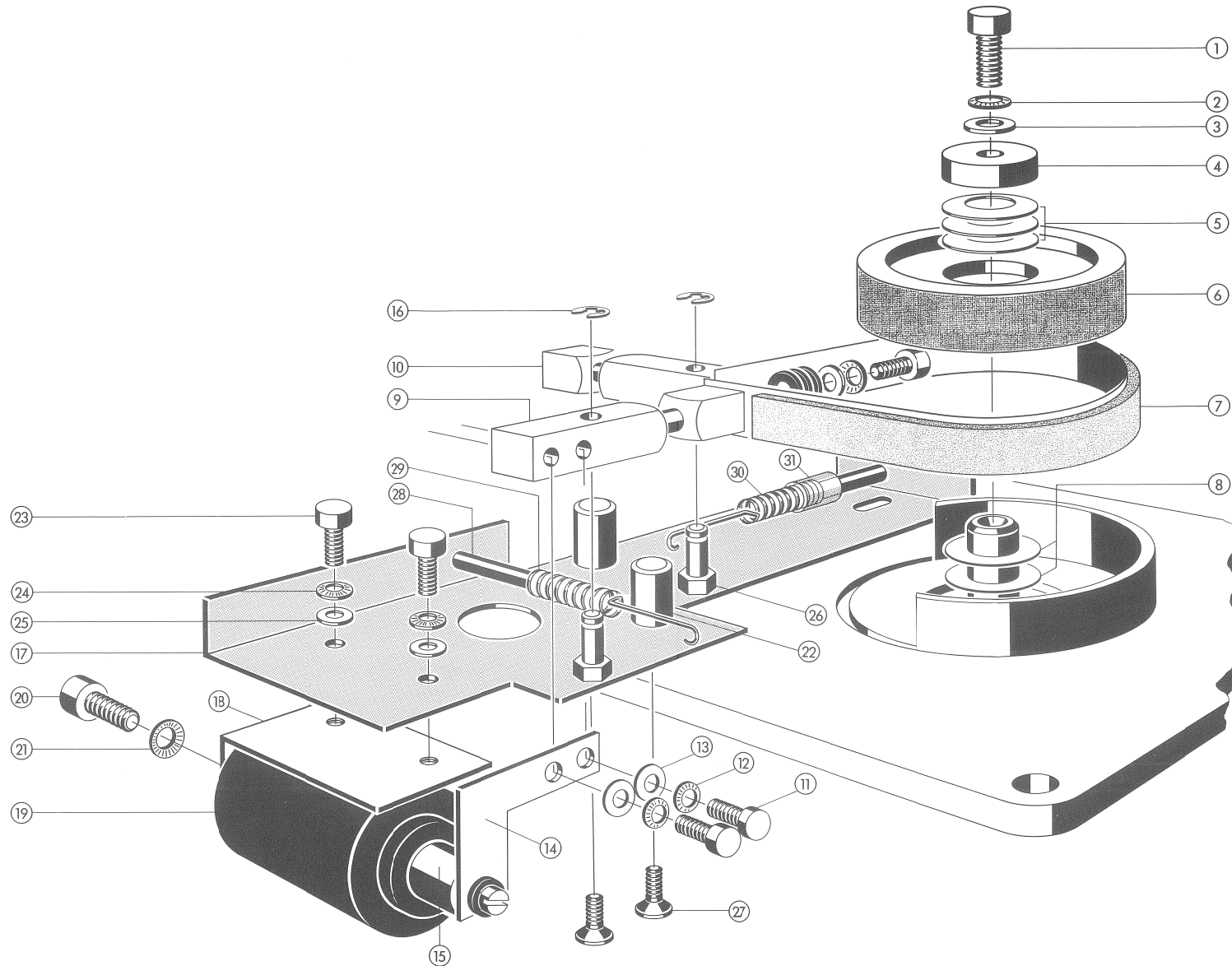
Caution:
ethyl chloride is not suitable!

BEFESTIGUNGSMATERIAL

MOUNTING ACCESSORIES

INDEX	QTY	ORDER NUMBER	BEZEICHNUNG	PART NAME
01	2	21.53.0456	Schraube Z,IS M4 x 10	Screw Z,IS M4 x 10
to above	2	24.16.1040	Sicherungsscheibe	Lock washer
	2	23.01.2043	U-Scheibe	Washer

BRAKES 2" / 1"

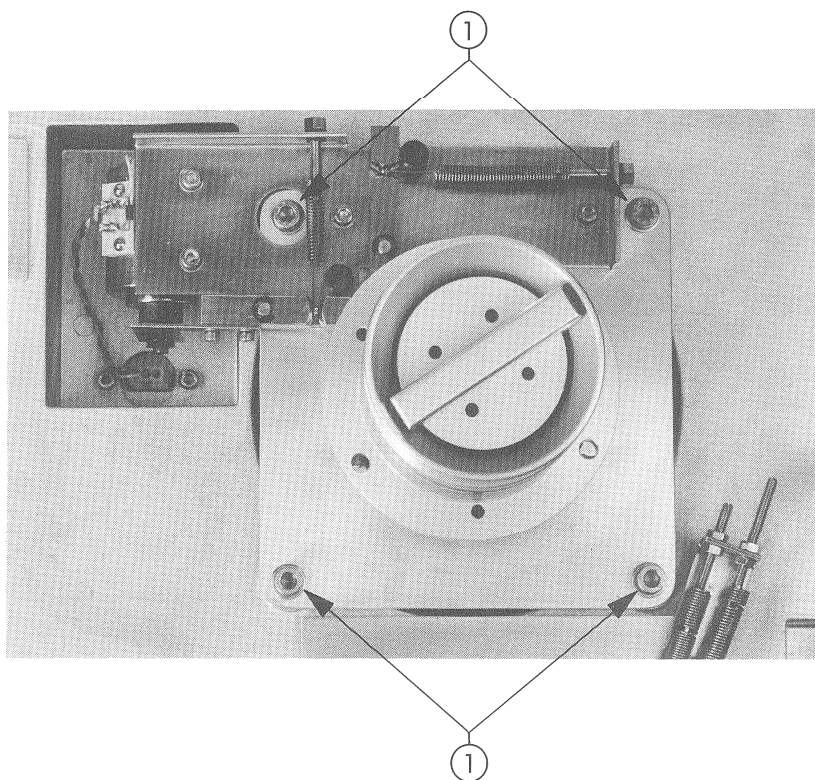


BRAKES 2" / 1"

INDEX	QTY	ORDER NUMBER	BEZEICHNUNG	PART NAME
01	1	21.53.0559	Schraube Z,IS M6 x 18	Screw Z,IS M6 x 18
02	1	24.16.1060	Sicherungsscheibe	Lock washer
03	1	23.01.2064	U-Scheibe	Washer
04	1	1.180.100.39	Druckscheibe	Thrust washer
05	3	37.01.0128	Tellerfeder	Spring washer
06	1	1.180.250.00	Bremsrolle	Brake roller
07	1	1.180.107.00	Bremsband	Brake band
to above	2	21.53.0354	Schraube Z,IS M3 x 6	Screw Z,IS M3 x 6
	2	23.01.2064	U-Scheibe	Washer
	2	23.01.3032	U-Scheibe	Washer
	2	24.16.1030	Sicherungsscheibe	Lock washer
08		1.062.353.03	Distanzscheibe	Spacer shim
09	1	1.180.100.35	Bremshebel	Brake lever
10	1	1.180.100.36	Bremshebel	Brake lever
11	2	21.53.0354	Schraube Z,IS M3 x 6	Screw Z,IS M3 x 6
12	2	24.16.1030	Sicherungsscheibe	Lock washer
13	2	23.01.2032	U-Scheibe	Washer
14	1	1.180.100.37	Gabel	Fork
15	1	1.014.753.00	Anker	Anchor
to above	1	1.010.096.37	Druckfeder	Pressure spring
16	2	24.16.3040	Wellensicherung	Circlip
		1.180.245.00	Bremschassis rechts kompl.	Brake chassis right compl.
		1.180.235.00	Bremschassis links kompl.	Brake chassis left compl.
17	1	1.180.245.01	Bremschassis rechts	Brake chassis right
	1	1.180.235.01	Bremschassis links	Brake chassis left
18	1	1.180.245.02	Magnethalter rechts	Solenoid holder right
	1	1.180.235.03	Magnethalter links	Solenoid holder left
19	1	1.014.725.00	Bremsmagnet	Brake solenoid
20	1	21.53.0505	Schraube Z,IS M5 x 8	Screw Z,IS M5 x 8
21	1	24.16.1050	Sicherungsscheibe	Lock washer
22	2	1.180.235.07	Anschlagbolzen	Stop pin
23	2	21.53.0455	Schraube Z,IS M4 x 8	Screw Z,IS M4 x 8
24	2	24.16.1040	Sicherungsscheibe	Lock washer
25	2	23.01.2043	U-Scheibe	Washer

[illegible]

SPOOLING MOTOR 2" / 1"



AUSBAU

- Adapter ausbauen (siehe section 9/47)
- Bremse ausbauen (siehe section 9/51)
- 4 Schrauben von oben lösen.
- Wickelmotor vorsichtig nach oben ausfahren.
- 2 Befestigungsschrauben der Speisekabel lösen und Kabel entfernen.

ERSETZEN DER KOHLEBÜRSTEN

Die Kohlebürsten können ersetzt werden ohne die Wickelmotoren auszubauen.

- Die 2 schwarzen Kunststoffschrauben im Boden der Wickelmotoren von der Rückseite der Maschine heraus-schrauben.
- Kohlebürsten mit den Andruckfedern nach unten heraus-ziehen.
- Neue Kohlebürsten einsetzen und Schraube wieder ein-setzen.

REMOVAL

- Remove the adapter (see section 9/47)
- Remove the brake (see section 9/51)
- Undo 4 screws from top.
- Remove the spooling motor carefully upwards.
- Undo the 2 screws which fix the supply cables and remove the cables.

REPLACEMENT OF THE CARBON BRUSHES

For the replacement of the carbon brushes the motor needn't to be removed.

- Undo the 2 plastic screws in the bottom of the spooling motor from the rear of the machine.
- Pull out the 2 carbon brushes.
- Replace the carbon brushes and fix the 2 screws again.

PFLEGEHINWEISE

Keine

CARE

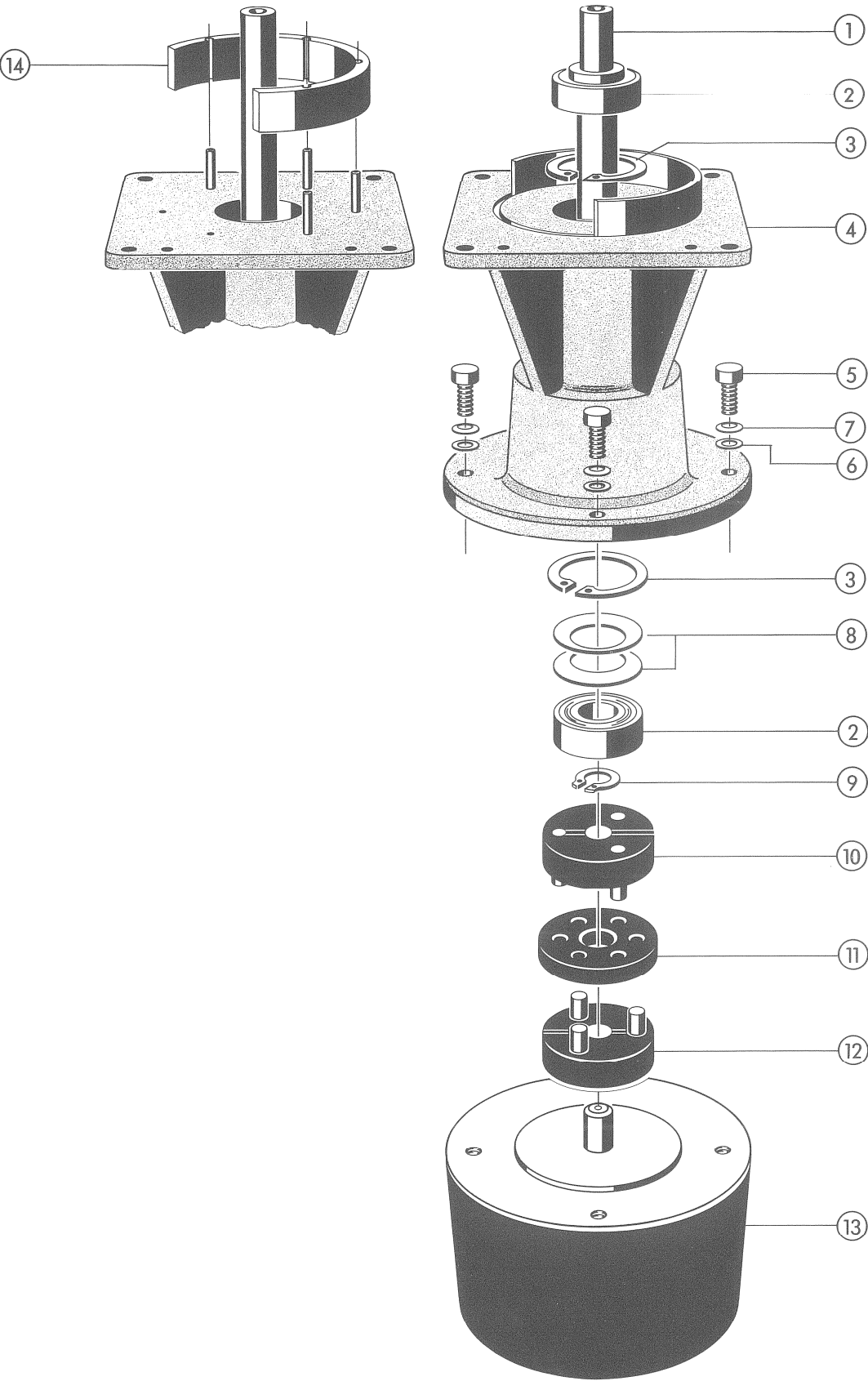
No

BEFESTIGUNGSMATERIAL

MOUNTING ACCESSORIES

INDEX	QTY	ORDER NUMBER	BEZEICHNUNG	PART NAME
01	4	21.53.0559	Schraube Z,IS M6 x 18	Screw Z,IS M6 x 18
to above	4	24.16.1060	Sicherungsscheibe	Lock washer
	4	23.01.2064	U-Scheibe	Washer

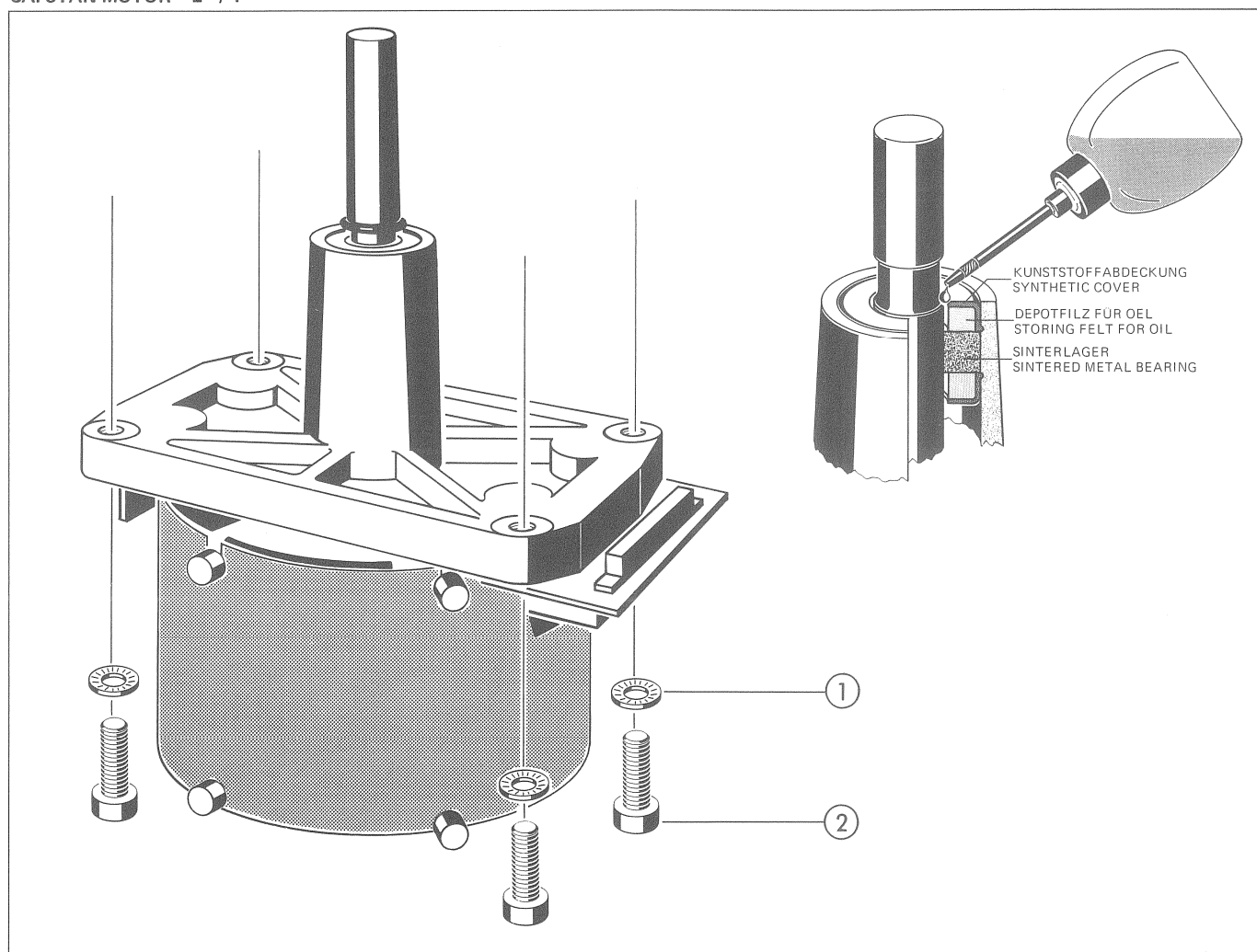
SPOOLING MOTOR 2" / 1"



SPOOLING MOTOR 2" / 1"

[illegible]

CAPSTAN MOTOR 2" / 1"



AUSBAU

- Mehrfachstecker lösen.
- 4 Schrauben von unten lösen.
- Tonmotor vorsichtig nach unten ausfahren.

REMOVAL

- Disconnect multipoint connector.
- Undo 4 screws from below.
- Remove the capstan motor carefully downwards.

PFLEGEHINWEISE

Die Achse darf nur mit einem feuchten Lappen gereinigt werden.

Achtung:

Darauf achten, dass die verwendeten Reinigungsmittel nicht der Capstanachse nach in das obere Lager fließen.

Schmieren:

Der Capstanmotor ist wartungsfrei; um jedoch die Lebensdauer zu erhöhen, empfehlen wir, das Capstanlager einmal jährlich zu schmieren:

Mit einem Oelfläschchen wird ein Tropfen Öl (PDP 65, Bestell-Nr. 20.020.401.04) angebracht.

CARE

The shaft may only be cleaned with a damp piece of cloth.

Caution:

Make sure the upper bearing does not become contaminated with cleansing solution flowing along the capstan shaft.

Lubrication:

The capstan motor does not require servicing; but to extend its lifetime it is recommended to lubricate the capstan bearing once a year:

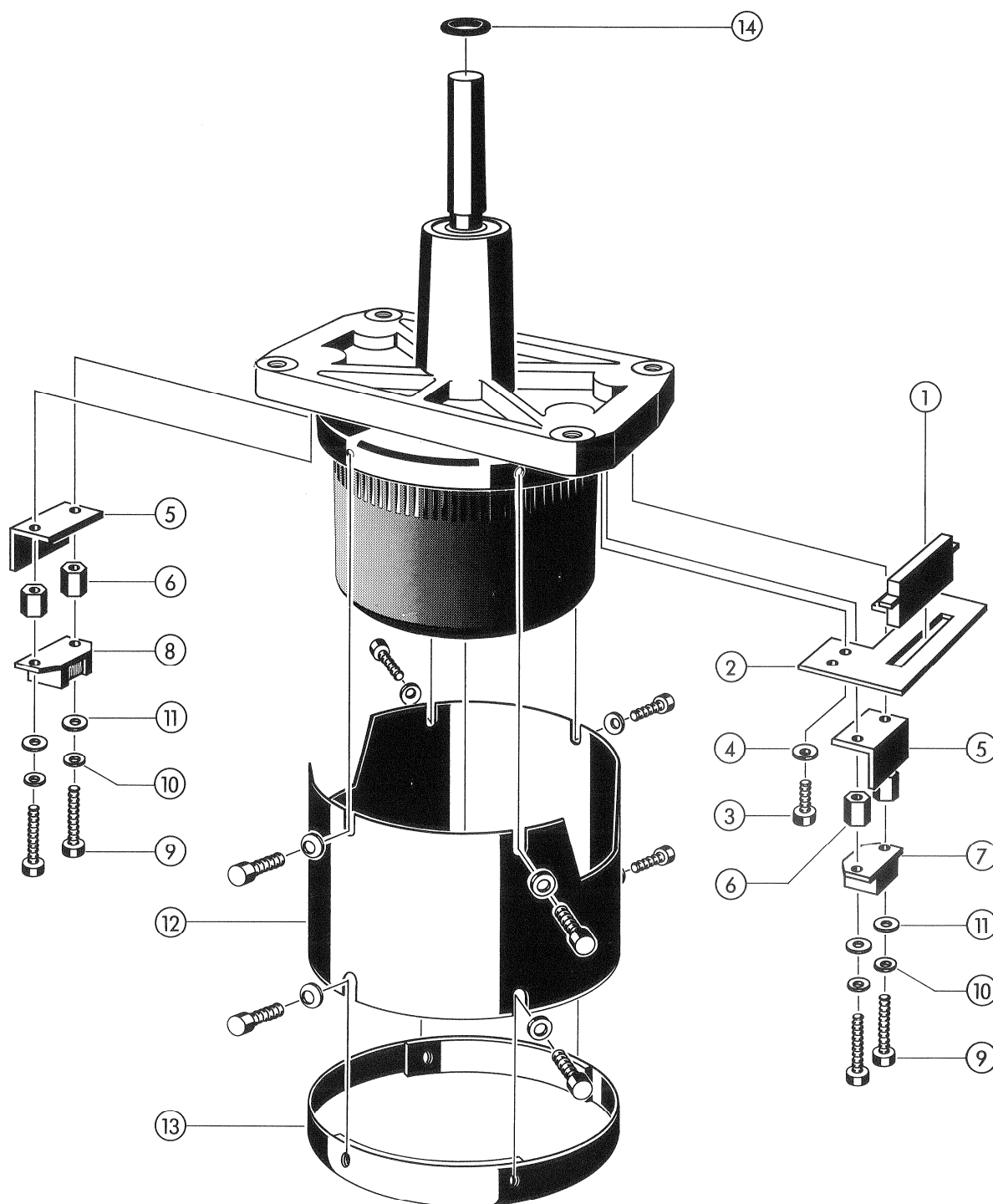
Apply one drop of oil (PDP 65, order no. 20.020.401.04) by means of an oiler.

BEFESTIGUNGSMATERIAL

MOUNTING ACCESSORIES

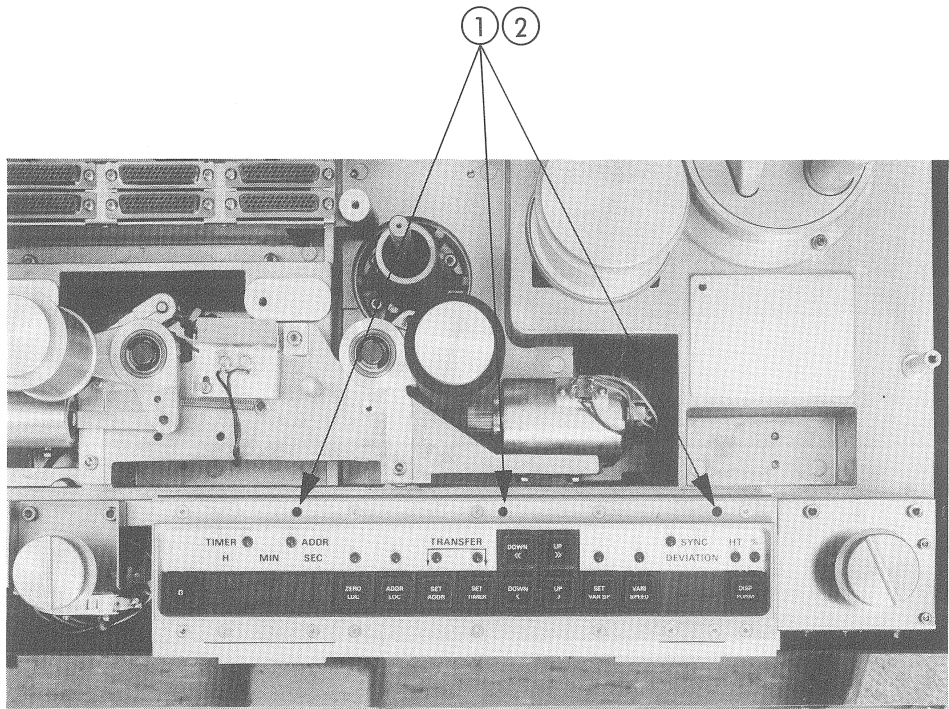
INDEX	QTY	ORDER NUMBER	BEZEICHNUNG	PART NAME
01	4	21.53.0462	Schraube Z,IS M4 x 25	Screw Z,IS M4 x 25
02	4	24.16.1040	Sicherungsscheibe	Lock washer

CAPSTAN MOTOR 2" / 1"



[illegible]

TIMER + VARISPEED CONTROL UNIT 2" / 1"



AUSBAU

- 3 Schrauben von oben lösen.
- Bauteil vorsichtig nach vorne ausfahren.
- 3 Mehrfachstecker lösen.

REMOVAL

- Undo 3 screws from top.
- Remove the assembly carefully horizontally toward the operator.
- Disconnect 3 multipoint connectors.

PFLEGEHINWEISE

Keine

CARE

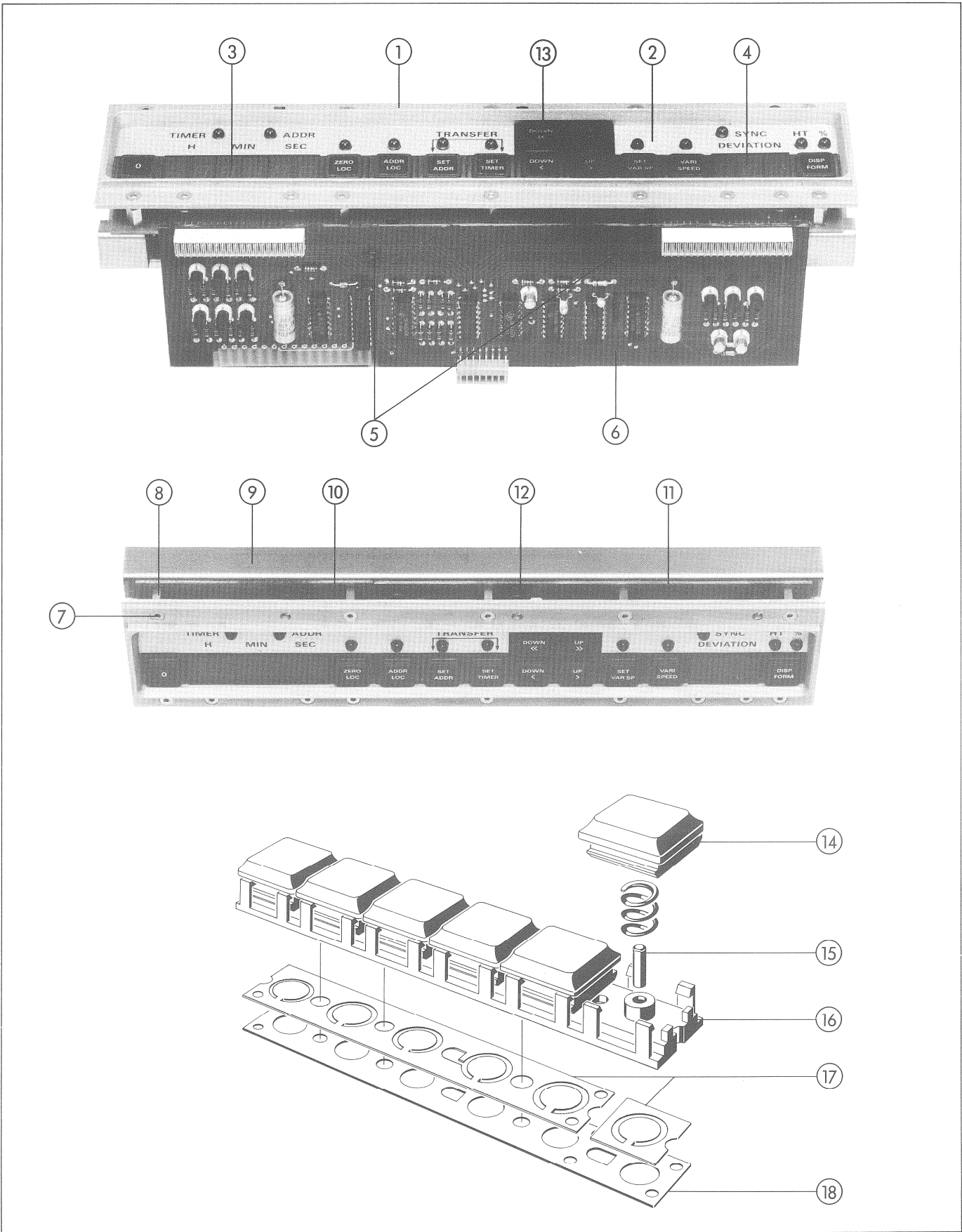
no

BEFESTIGUNGSMATERIAL

MOUNTING ACCESSORIES

INDEX	QTY	ORDER NUMBER	BEZEICHNUNG	PART NAME
01	2	21.53.0457	Schraube Z,IS M4 x 12	Screw Z,IS M4 x 12
02	2	24.16.1040	Sicherungsscheibe	Lock washer

TIMER + VARISPEED CONTROL UNIT 2" / 1"

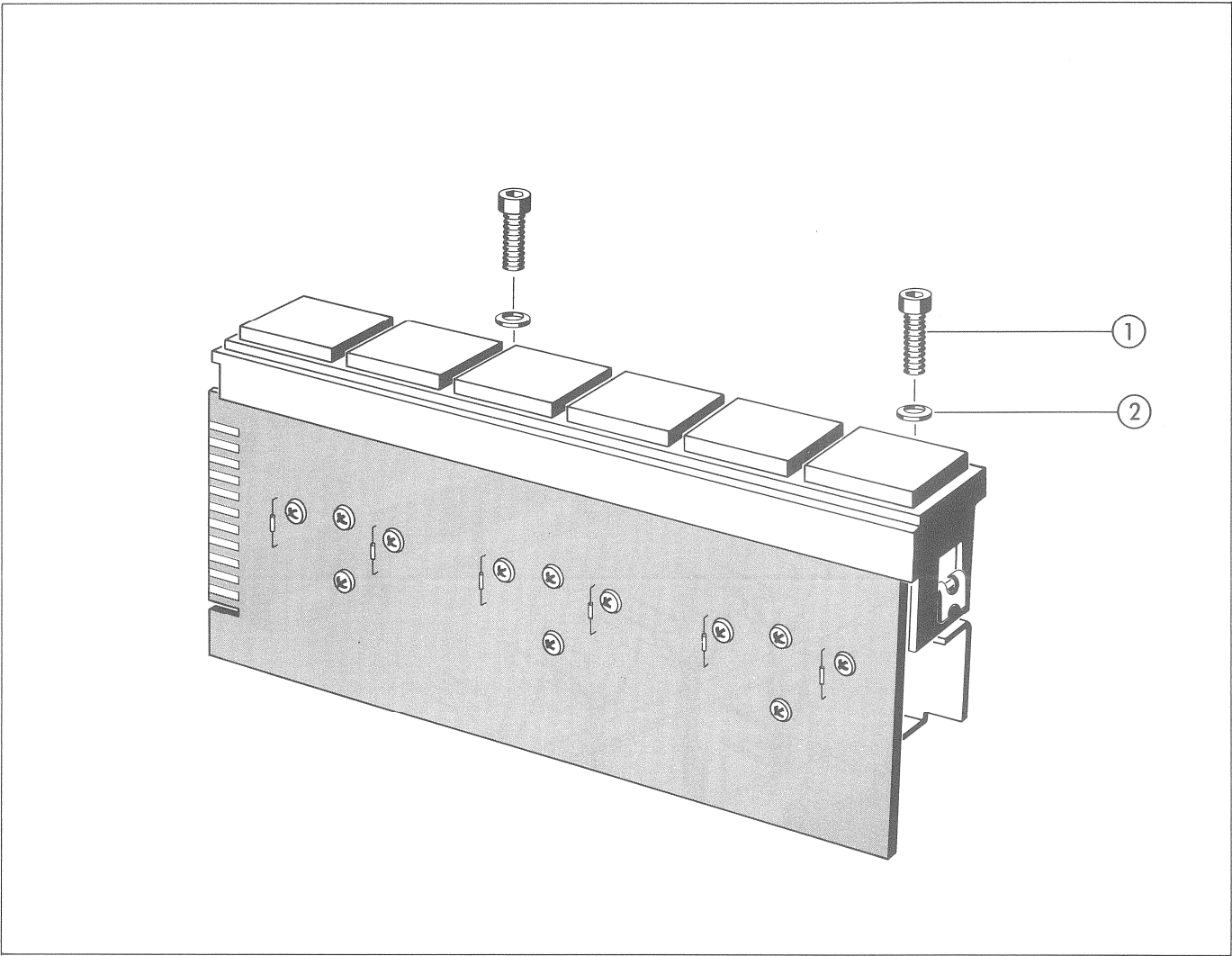


TIMER + VARISPEED CONTROL UNIT 2" / 1"

INDEX	QTY	ORDER NUMBER	BEZEICHNUNG	PART NAME
		1.180.260.00	Timer + Varispeed Control Unit	Timer + varispeed control unit
01	1	1.180.260.02	Tastenrahmen	Push button frame
02	1	1.180.260.06	Blende beschriftet	Mask lettered
03	1	1.180.260.04	Filter gross	Filter large
to above	2	21.51.2354	Senkschraube IS M3 x 6	Countersunk screw IS M3 x 6
	2	24.16.1030	Sicherungsscheibe	Lock washer
	2	23.01.3032	U-Scheibe	Washer
	2	22.01.8030	6Kt-Mutter M3	Hex. nut M3
04	1	1.180.260.03	Filter klein	Filter small
to above	2	21.51.2354	Senkschraube IS M3 x 6	Countersunk screw IS M3 x 6
	2	24.16.1030	Sicherungsscheibe	Lock washer
	2	23.01.3032	U-Scheibe	Washer
	2	22.01.8030	6Kt-Mutter M3	Hex. nut M3
05	2	21.53.0354	Schraube Z,IS M3 x 6	Screw Z,IS M3 x 6
to above	2	24.16.1030	Sicherungsscheibe	Lock washer
06	1	1.180.263.00	Timer + Varispeed - Driver Print	Timer + varispeed - driver print
07	10	21.51.2354	Senkschraube IS M3 x 6	Countersunk screw IS M3 x 6
08	10	1.180.260.05	Distanzbolzen	Distance bolt
09	1	1.180.260.01	Wanne	Tub
10	1	1.180.274.00	Varispeed Display PC-Card	Varispeed display PC-card
to above	2	21.53.0354	Schraube Z,IS M3 x 6	Screw Z,IS M3 x 6
	2	24.16.1030	Sicherungsscheibe	Lock washer
11	1	1.180.264.00	Timer Display PC-Card	Timer display PC-card
12	3	21.53.0462	Schraube Z,IS M4 x 25	Screw Z,IS M4 x 25
to above	3	24.16.1040	Sicherungsscheibe	Lock washer
	3	1.010.019.27	Distanzhülse	Spacer bush
13	1	1.180.100.69	Beschriftungssatz	Lettering set
14	12	1.011.201.28	Drucktaste	Push button
15	12	1.011.220.03	Zylinder-Stift	Cylindrical pin
16	1	1.011.206.01	Gehäuse für 6 Drucktasten	Housing for 6 push buttons
	1	1.011.202.07	Gehäuse für 2 Drucktasten	Housing for 2 push buttons
	4	1.011.201.01	Gehäuse für 1 Drucktaste	Housing for 1 push buttons
17	1	1.011.205.02	Schnappfederstreifen f. 5 Tasten	Snap spring strip f. 5 buttons
	1	1.011.202.09	Schnappfederstreifen f. 2 Tasten	Snap spring strip f. 2 buttons

[illegible]

PUSH BUTTON ASSEMBLY 2" / 1"



AUSBAU

- Mehrfachstecker lösen.
- 2 Schrauben von oben lösen.
- Drucktastenaggregat vorsichtig nach oben ausfahren.

REMOVAL

- Disconnect multipoint connector.
- Undo 2 screws from top.
- Remove the push button assembly carefully upwards.

PFLEGEHINWEISE

Achtung:
Kunststoffteile dürfen nicht mit Alkohol in Berührung kommen.

Kontaktbahnen und Kontakte können mit Spiritus gereinigt und anschliessend mit Kontaktoel (Doduconta Nr.20.020.401.03) geschmiert werden.

Empfohlene Reinigungsmittel:
Alkohol, Spiritus oder Reinbenzin.

CARE

Caution:
Plastic parts must not be moistened with alcohol.

Contact banks and contacts can be cleaned with methylated spirits after which they may be lubricated with contact oil (Doduconta No.20.020.0401.03).

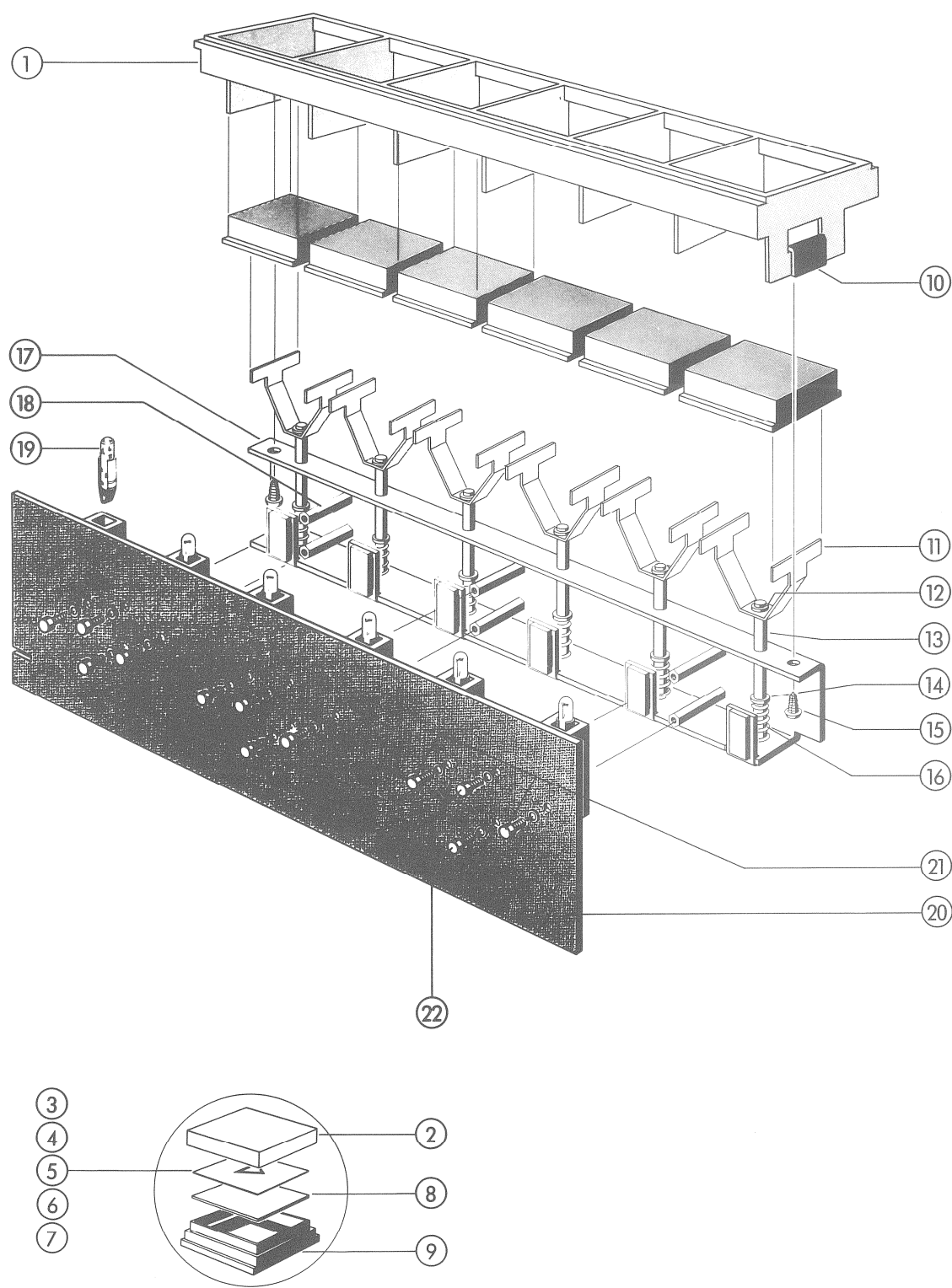
Recommended cleansing agents:
Alcohol, methylated spirits or benzene.

BEFESTIGUNGSMATERIAL

MOUNTING ACCESSORIES

INDEX	QTY	ORDER NUMBER	BEZEICHNUNG	PART NAME
01	2	21.53.0472	Schraube M4 x 16	Screw M4 x 16
02	2	24.16.1040	Sicherungsscheibe	Lock washer

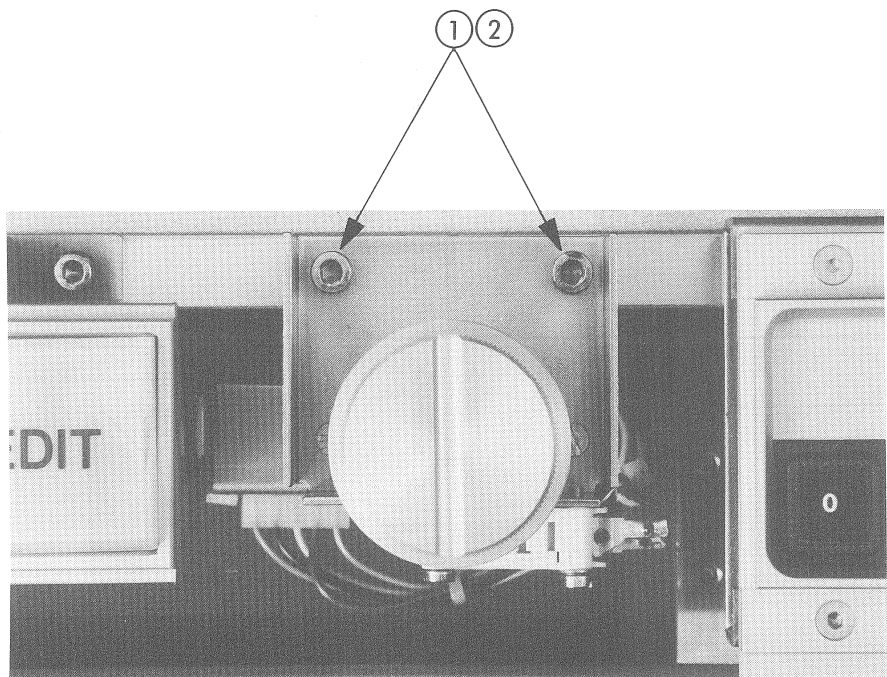
PUSH BUTTON ASSEMBLY 2" / 1"



PUSH BUTTON ASSEMBLY 2" / 1"

[illegible]

CUTTER CONTROL ASSEMBLY 2" / 1"



AUSBAU

- 1 Mehrfachstecker lösen.
- 2 Schrauben von oben lösen.
- Regler vorsichtig nach vorne ausfahren.

REMOVAL

- Disconnect multipoint connector.
- Undo 2 screws from top.
- Remove the switch carefully upwards.

PFLEGEHINWEISE

Die Aluminium - Flächen sind mit Eloxal - Reiniger zu säubern.

CARE

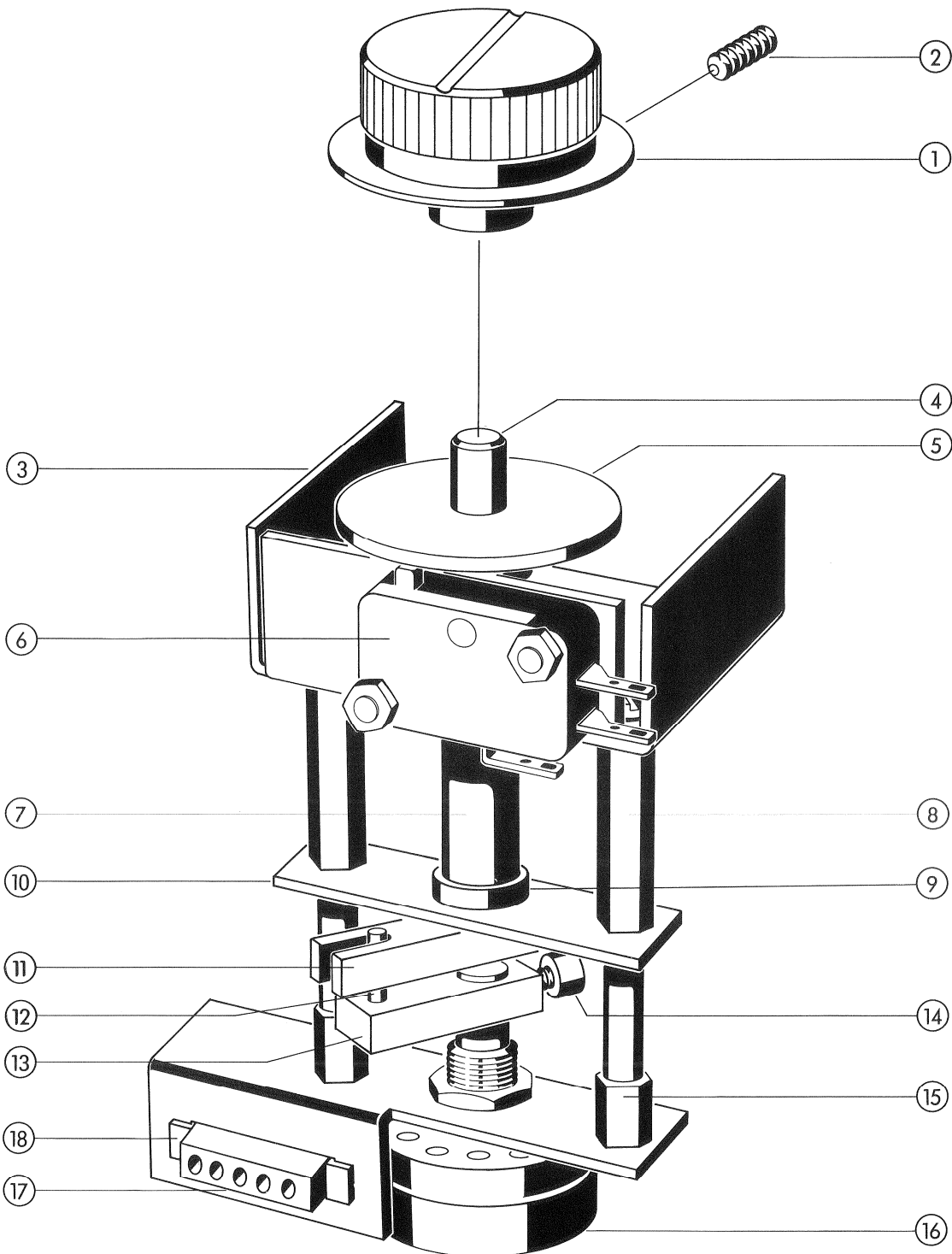
Clean aluminium surfaces with Eloxal (aluminite) cleaner.

BEFESTIGUNGSMATERIAL

MOUNTING ACCESSORIES

INDEX	QTY	ORDER NUMBER	BEZEICHNUNG	PART NAME
01	2	21.53.0457	Schraube Z,IS M4 x 12	Screw Z,IS M4 x 12
02	2	24.16.1040	Sicherungsscheibe	Lock washer

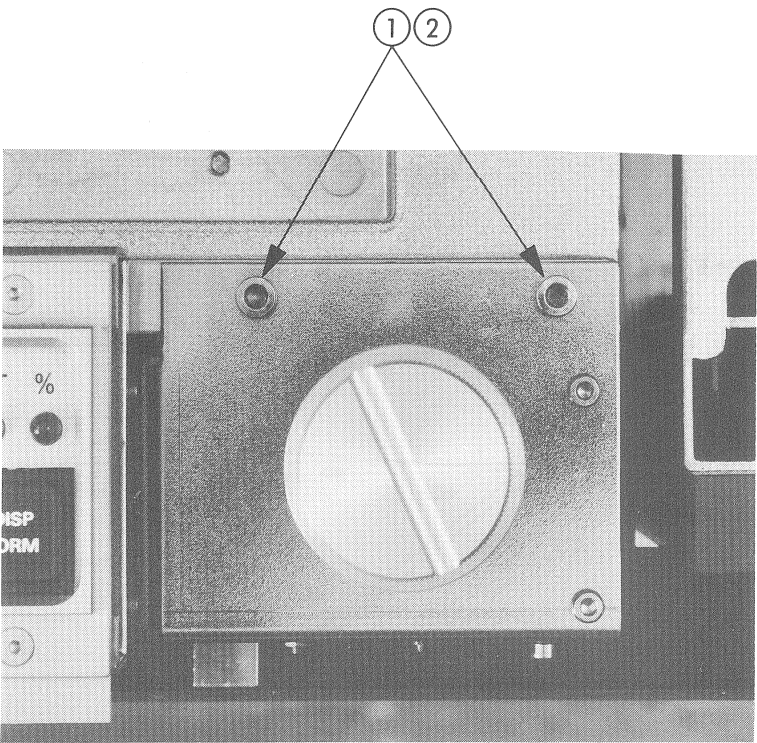
CUTTER CONTROL ASSEMBLY 2" / 1"



CUTTER CONTROL ASSEMBLY 2" / 1"

INDEX	QTY	ORDER NUMBER	BEZEICHNUNG	PART NAME
		1.180.291.00	EDIT-Regler	Cutter control assembly
01	1	1.080.105.10	Drehknopf	Knob
02	1	21.59.5452	Gewindestift	Set screw
03	1	1.180.291.01	Winkel	Bracket
to above	1	1.077.450.04	Büchse	Bush
04	1	1.080.310.06	Achse	Shaft
05	1	1.080.310.05	Schaltscheibe	Cam wheel
to above	1	21.53.0355	Schraube Z,IS M3 x 8	Screw Z,IS M3 x 8
	1	1.080.310.04	Druckfeder	Pressure spring
06	1	55.01.0124	Mikroschalter	Microswitch
to above	2	21.53.0371	Schraube Z,IS M3 x 14	Screw Z,IS M3 x 14
	2	24.16.1030	Sicherungscheibe	Lock washer
	2	23.01.1032	U-Scheibe	Washer
07	1	1.010.017.27	Distanzhülse	Spacer bush
08	2	1.010.025.27	Mutterbolzen	Threaded stud
to above	2	21.53.0354	Schraube Z,IS M3 x 6	Screw Z,IS M3 x 6
	2	24.16.1030	Sicherungscheibe	Lock washer
09	1	1.077.450.04	Büchse	Bush
10	1	1.080.310.02	Lagerplatte	Bearing bracket
11	1	1.080.310.08	Mitnehmergabel	Driving fork
to above	1	23.01.1064	U-Scheibe	Washer
	1	21.53.0355	Schraube Z,IS M3 x 8	Screw Z,IS M3 x 8
12	1	25.06.8208	Zylinderstift	Cylindrical pin
to above	1	1.090.045 06	Distanzschlauch	Spacer tube
13	1	1.080.310.09	Mitnehmer zu Cutter Potentiometer	Driver to cutter potentiometer
14	1	21.53.0355	Schraube Z,IS M3 x 8	Screw Z,IS M3 x 8
15	2	1.080.310.07	Gewindebolzen	Threaded bolt
16	1	1.180.291.93	Cutter Potentiometer	Cutter potentiometer
17	1	1.180.291.02	Halter	Mount
to above	2	21.53.0354	Schraube Z,IS M3 x 6	Screw Z,IS M3 x 6
	2	24.16.1030	Sicherungscheibe	Lock washer
18	1	54.02.0403	Molex Gehäuse	Molex case

MAINS AND TAPE SPEED SWITCH 2" / 1"



AUSBAU

- 2 Schrauben von oben lösen .
- Regler vorsichtig nach vorne ausfahren.
- 2 Mehrfachstecker lösen.

REMOVAL

- Undo 2 screws from top.
- Remove the switch carefully horizontally toward the operator.
- Disconnect 2 multipoint connectors.

PFLEGEHINWEISE

Die Aluminium – Flächen sind mit Eloxal – Reiniger zu säubern.

CARE

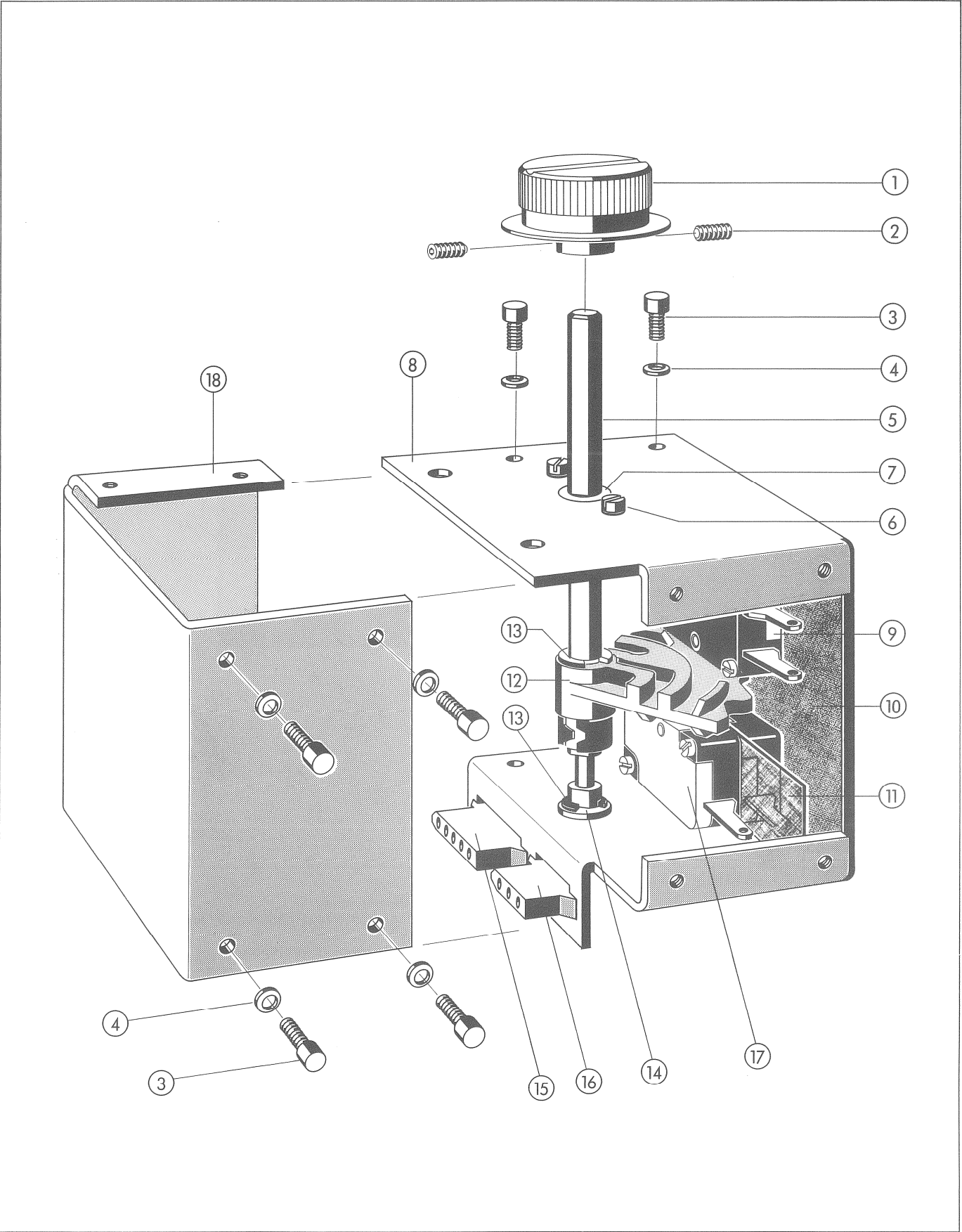
Clean aluminium surfaces with Eloxal (aluminite) cleanser.

BEFESTIGUNGSMATERIAL

MOUNTING ACCESSORIES

INDEX	QTY	ORDER NUMBER	BEZEICHNUNG	PART NAME
01	2	21.53.0457	Schraube Z,IS M4 x 12	Screw Z,IS M4 x 12
02	2	24.16.1040	Sicherungsscheibe	Lock washer

MAINS AND TAPE SPEED SWITCH 2" / 1"



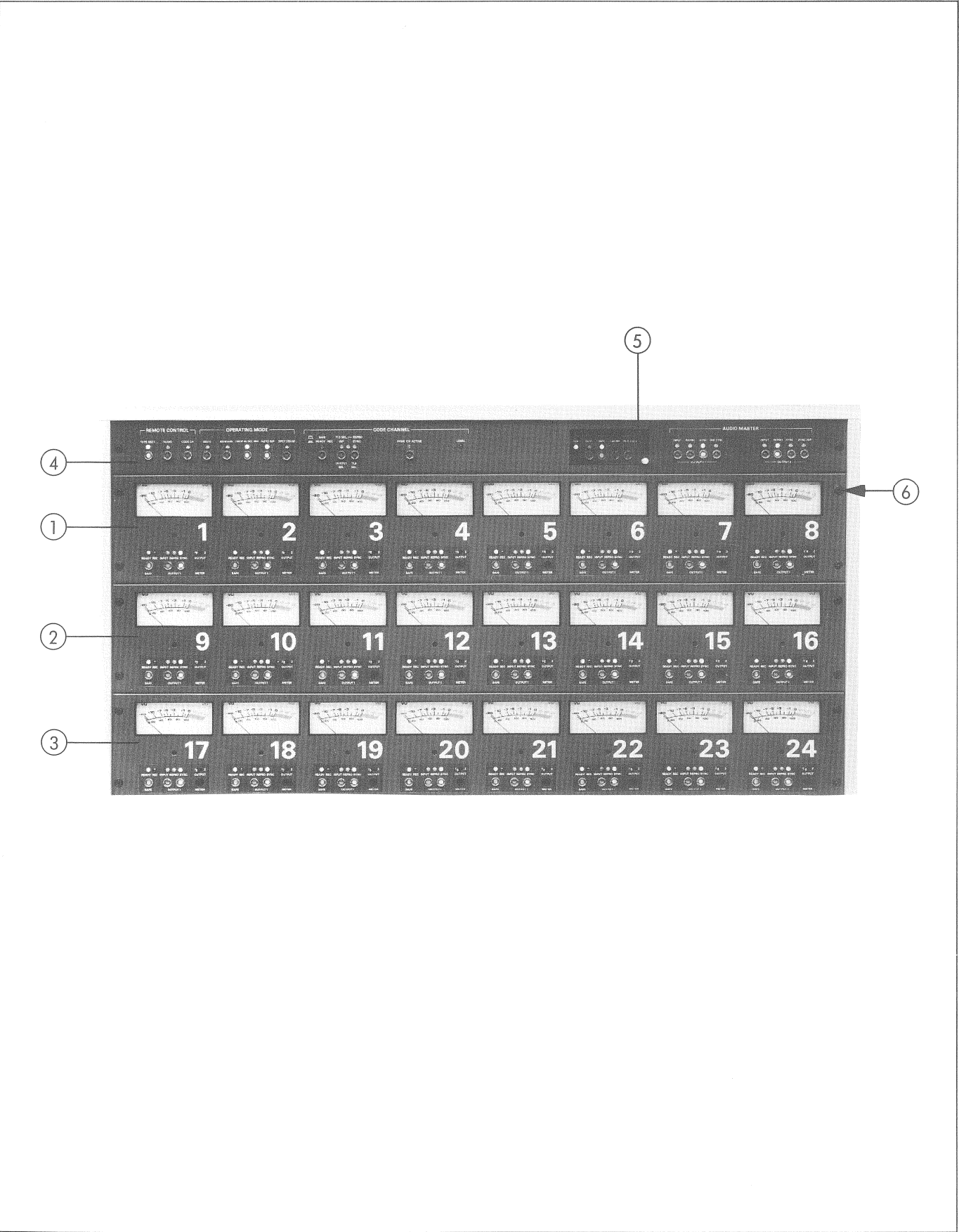
MAINS AND TAPE SPEED SWITCH 2" / 1"

INDEX	QTY	ORDER NUMBER	BEZEICHNUNG	PART NAME
		1.180.280.00	Netz- und Geschwindigkeitsregler	Mains and tape speed switch
01	1	1.080.105.10	Drehknopf	Knob
02	2	21.59.5452	Gewindestift	Set screw
03	8	21.53.0353	Schraube Z,IS M3 x 5	Screw Z,IS M3 x 5
04	8	24.16.1030	Sicherungsscheibe	Lock washer
05	1	1.180.280.01	Achse	Shaft
06	2	21.53.0353	Schraube Z,IS M3 x 5	Screw Z,IS M3 x 5
to above	2	24.16.1030	Sicherungsscheibe	Lock washer
	2	1.010.025.22	Schlitzmutter M3	Slotted nut M3
07	2	1.077.450.04	Büchse	Bush
to above	1	1.080.280.02	Anschlag	Stop plate
	1	24.16.3040	Wellensicherung	Circlip
08	1	1.180.280.02	Bügel	Mounting bow
09	1	55.01.0124	Mikroschalter	Microswitch
to above	2	21.53.0371	Schraube Z,IS M3 x 14	Screw Z,IS M3 x 14
	2	24.16.1030	Sicherungsscheibe	Lock washer
10	1	1.180.280.04	Isolierplatte	Isolating plate
11	1	1.180.280.05	Zwischenwand	Interpartition
12	1	1.077.450.00	Schalterplatte kompl.	Switch compl.
to above	1	41.01.0260	Kugel rostfrei	Ball inox
	1	1.077.441.01	Büchse	Bush
	3	1.077.440.03	Blattfedern	Leaf spring
	1	23.01.3032	U-Scheibe	Washer
	1	24.16.1030	Sicherungsscheibe	Lock washer
	1	21.53.0353	Schraube Z,IS M3 x 5	Screw Z,IS M3 x 5
13	2	24.16.3040	Wellensicherung	Circlip
14	1	1.077.450.04	Büchse	Bush
15	1	54.02.0403	Mollex Gehäuse 5 Pol	Mollex case 5 pol
16	1	54.02.0401	Mollex Gehäuse 3 Pol	Mollex case 3 pol
17	2	55.01.0138	Mikroschalter	Microswitch
to above	2	21.01.0213	Schraube Z,IS M2 x 28	Screw Z,IS M2 x 28
	4	1.077.440.08	Büchse	Bush
	2	23.01.1022	U-Scheibe	Washer
	2	24.99.0109	Federring	Spring washer

MAINS AND TAPE SPEED SWITCH 2" / 1"

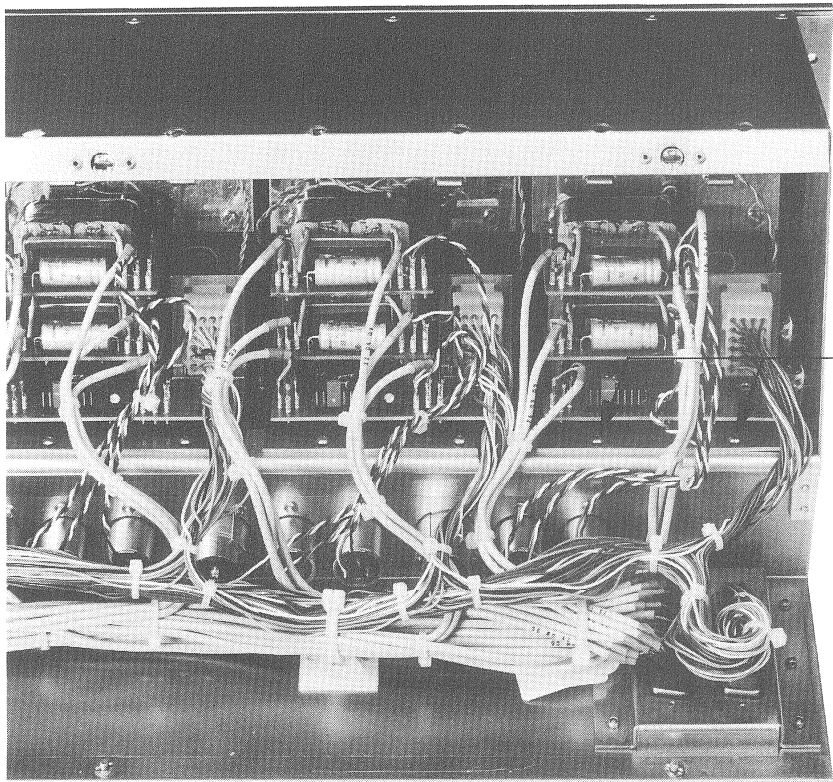
[illegible]

VU - METER ASSEMBLY 2" / 1"



[illegible]

VU METER UNIT 2"/1"



AUSBAU

- Hintere Abdeckklappe öffnen.
- Alle Crimp-Stecker der entsprechenden VU-Meter Einheit ausziehen.
- Den Mehrfachstecker auf der rechten Seite lösen.
- Die 2 Schrauben des Chassisblechs lösen.
- VU-Meter Einheit vorsichtig nach hinten ausfahren.

REMOVAL

- Open the rear cover.
- Unplug all crimp-connectors of the VU-meter unit.
- Unplug the multipoint connector of the right side.
- Undo the two screws on bottom of the VU-meter unit.
- Remove the VU-meter unit carefully backwards.

PFLEGEHINWEISE

Keine

CARE

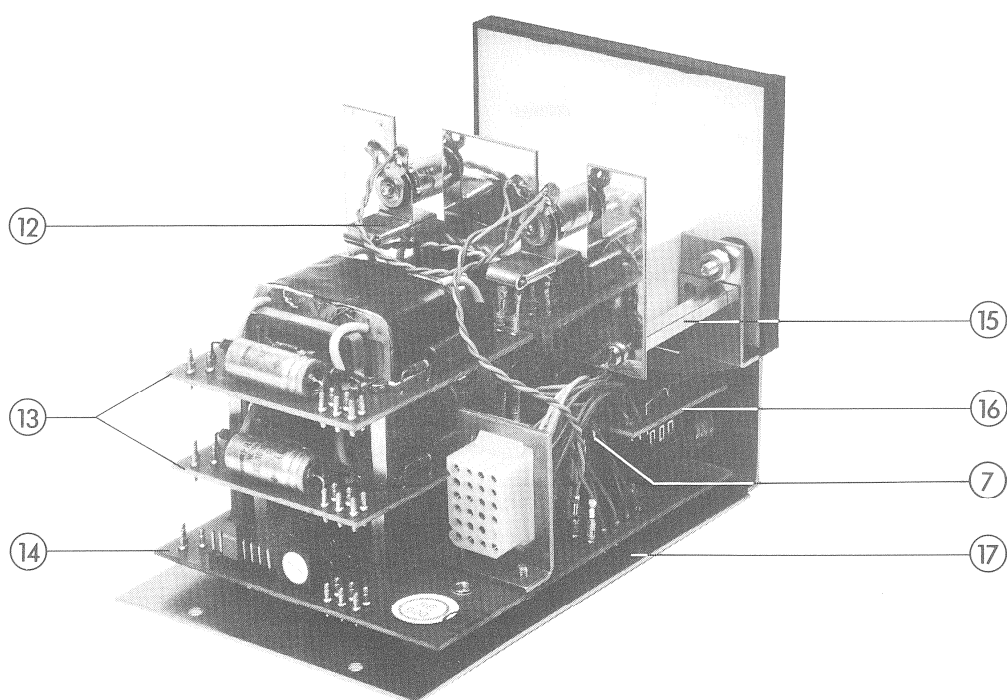
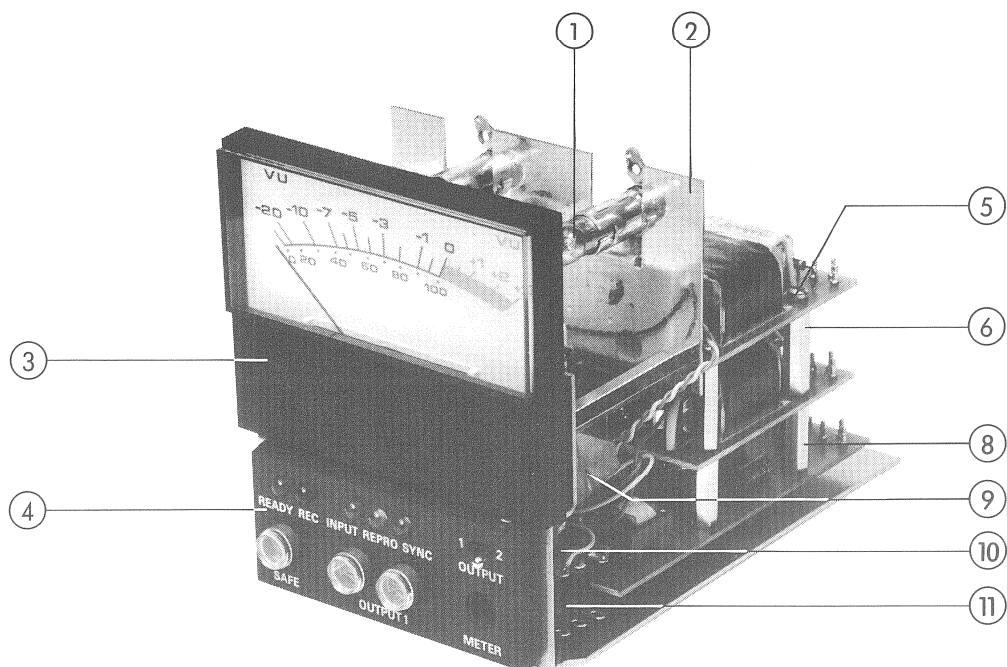
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BEFESTIGUNGSMATERIAL

MOUNTING ACCESSORIES

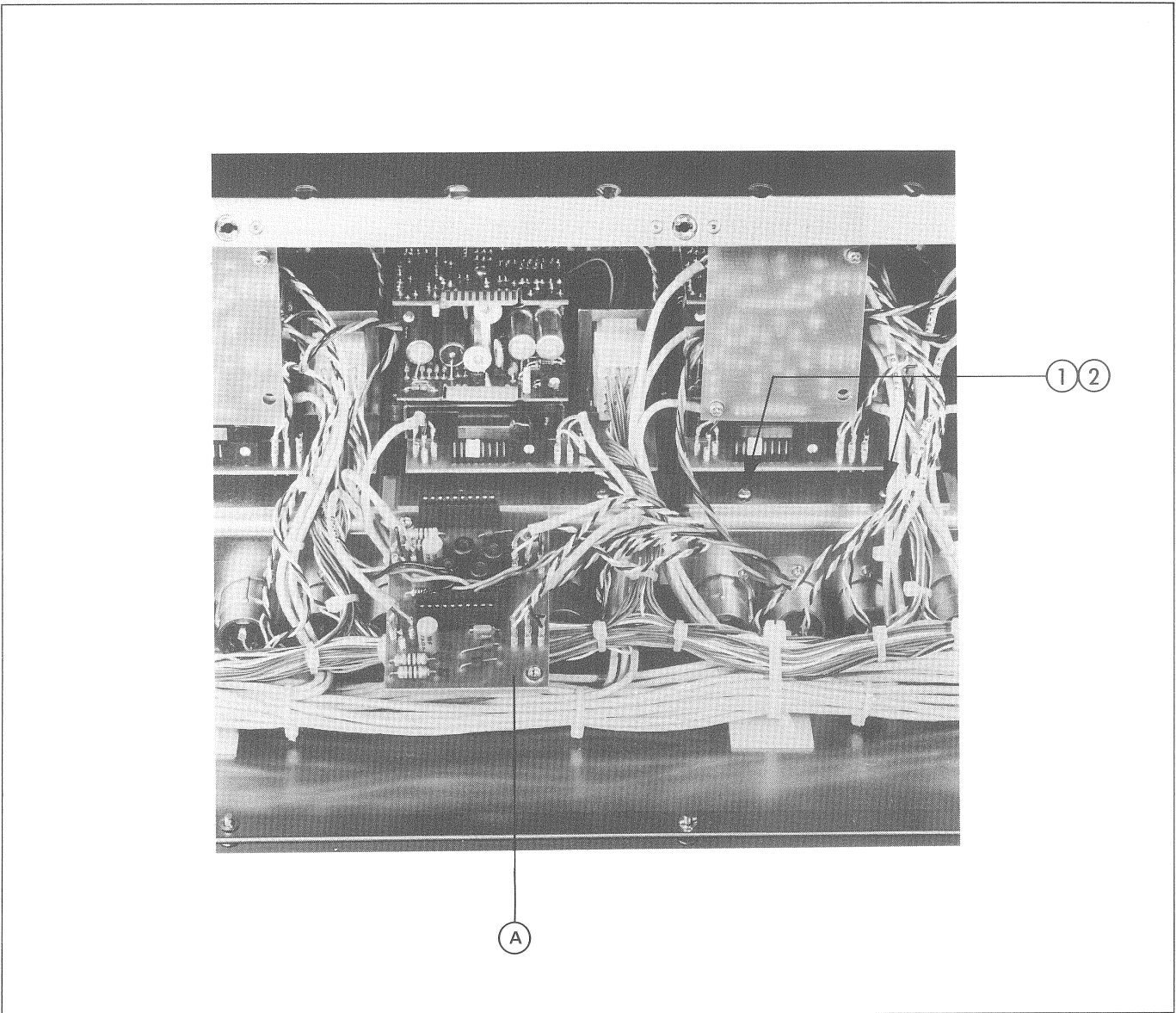
INDEX	QTY	ORDER NUMBER	BEZEICHNUNG	PART NAME
01	2	21.53.7354	Schraube LIN IS M3 x 6	Screw LIN Allen M3 x 6
02	2	24.16.1030	Sicherungsscheibe	Lock washer

VU METER UNIT 2"/1"



[illegible]

VU METER UNIT TRANSFORMERLESS 2"/1"



AUSBAU

- Hintere Abdeckklappe öffnen.
- Verbindungsprint [A] abstecken.
- Alle Crimp-Stecker der entsprechenden VU-Meter-Einheit ausziehen.
- Den Mehrfachstecker auf der rechten Seite lösen.
- Die 2 Schrauben des Chassisblechs lösen.
- VU-Meter-Einheit vorsichtig nach hinten ausfahren.

REMOVAL

- Open the rear cover.
- Disconnect connection pcb [A].
- Unplug all crimp connectors of the VU-meter unit.
- Unplug the multipin connector of the right side.
- Undo the two screws on bottom of the VU-meter unit.
- Remove the VU-meter unit carefully backwards.

PFLEGEHINWEISE

Keine

CARE

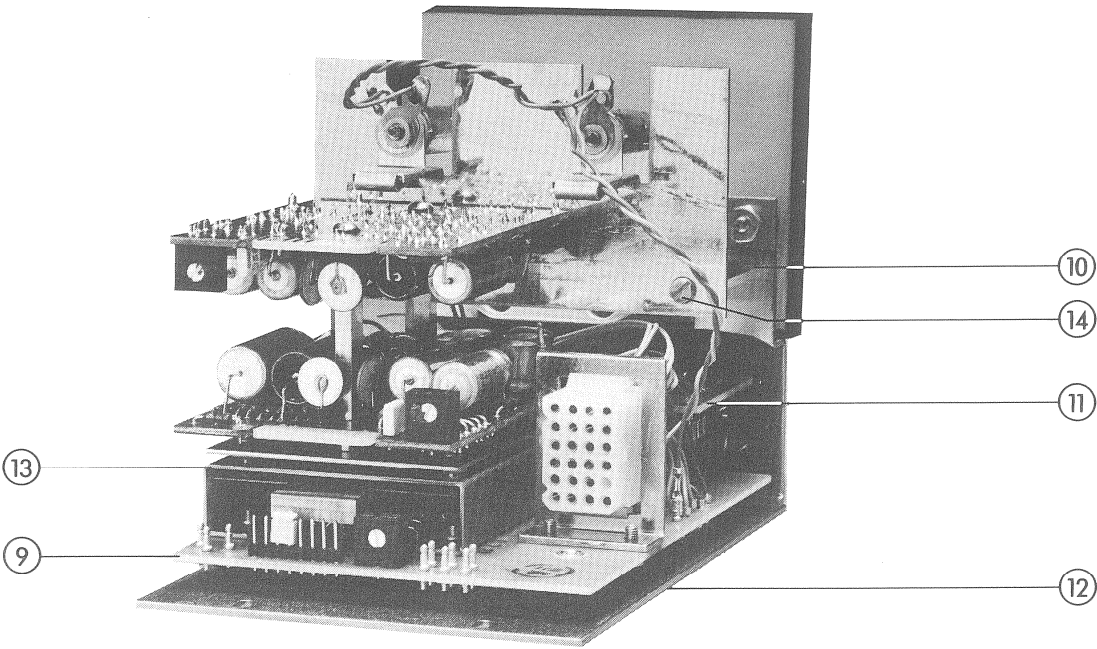
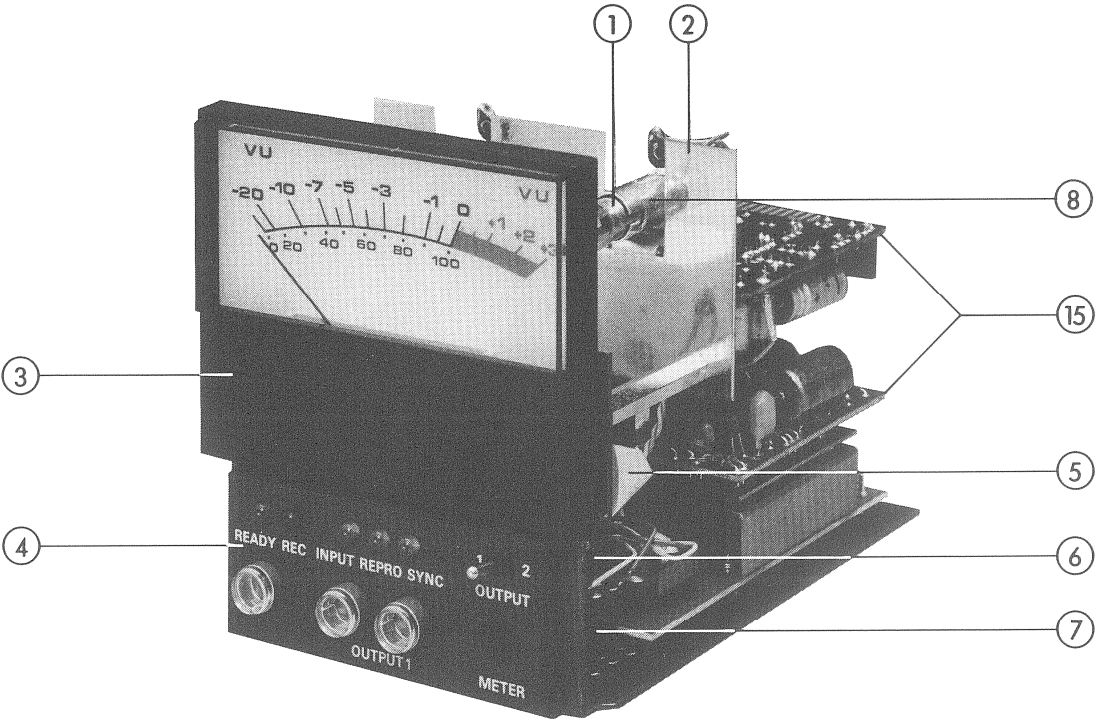
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BEFESTIGUNGSMATERIAL

MOUNTING ACCESSORIES

INDEX	QTY	ORDER NUMBER	BEZEICHNUNG	PART NAME
01	2	21.53.7354	Schraube LIN IS M3 x 6	Screw LIN Allen M3 x 6
02	2	24.16.1030	Sicherungsscheibe	Lock washer

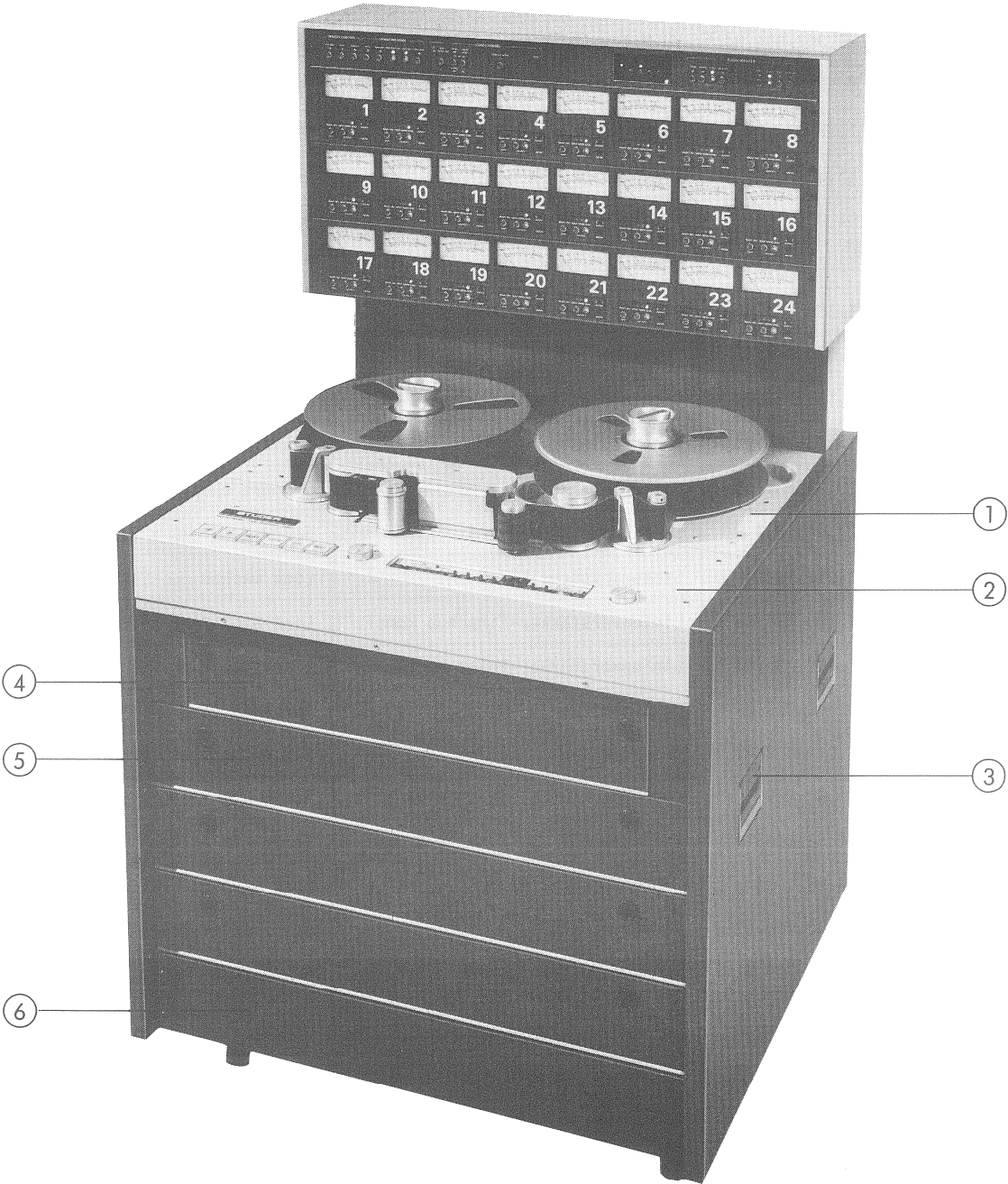
VU METER UNIT TRANSFORMERLESS 2"/1"



VU METER UNIT TRANSFORMERLESS 2"/1"

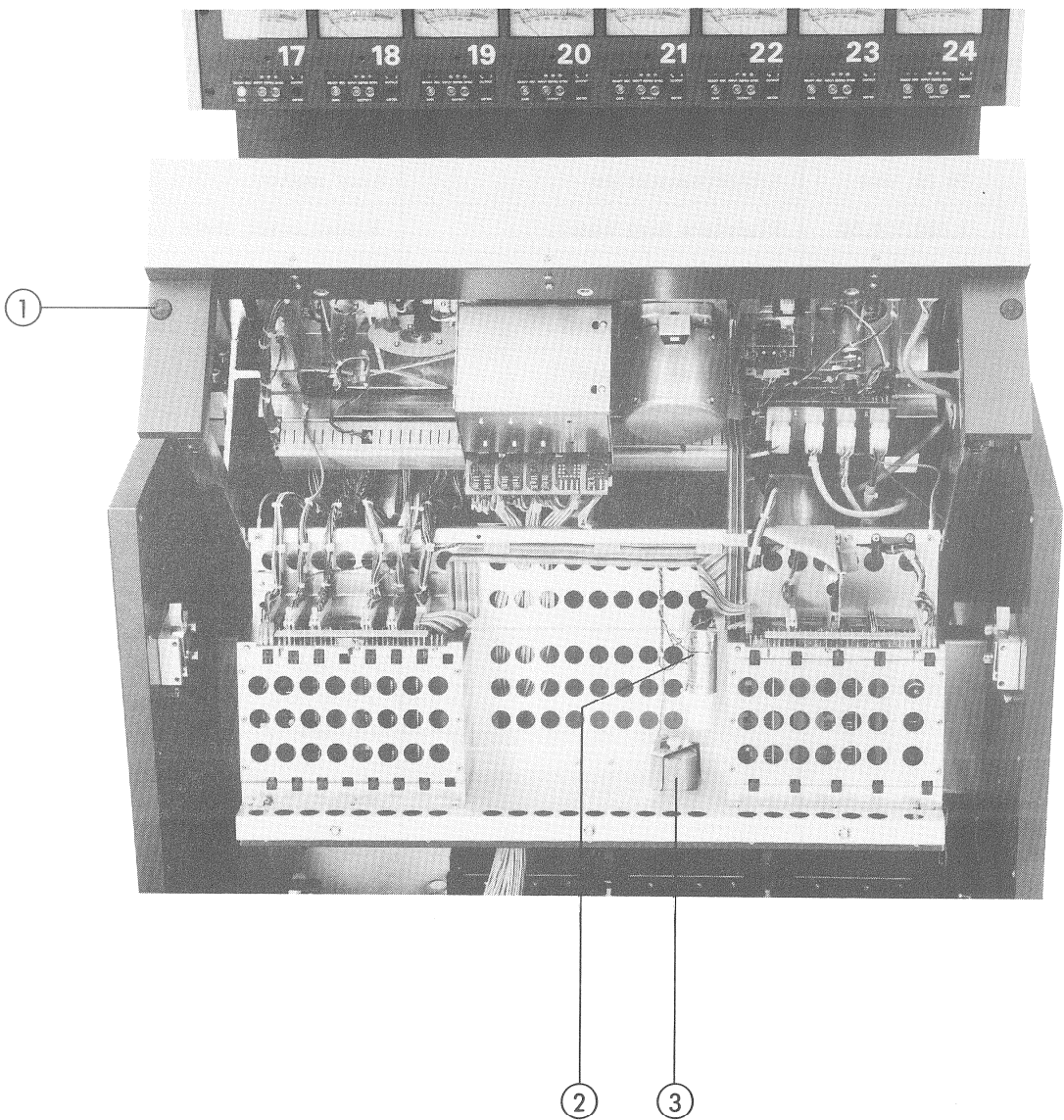
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CONSOLE ELEMENTS 2" / 1"



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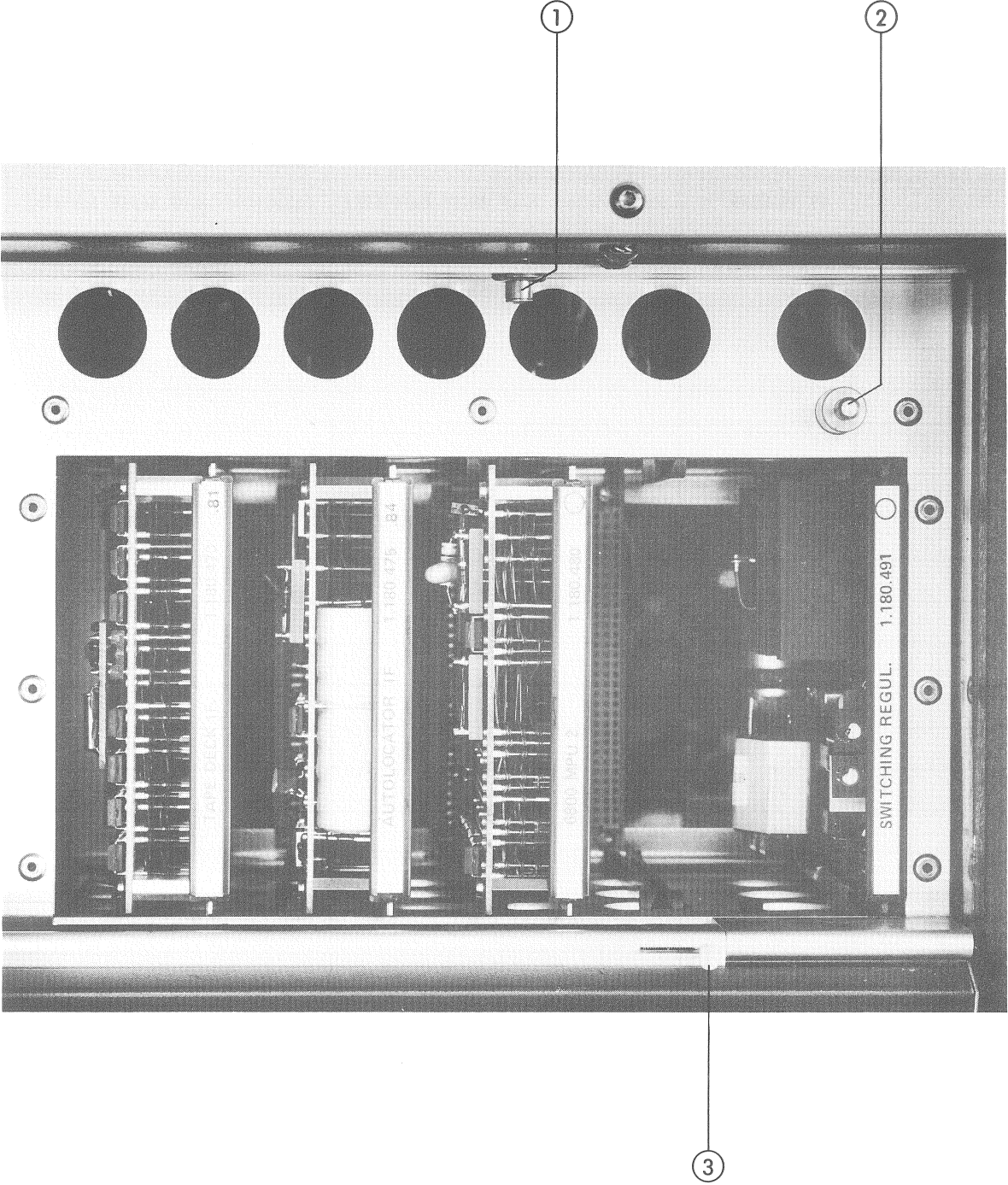
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CONSOLE ELEMENTS 2" / 1"

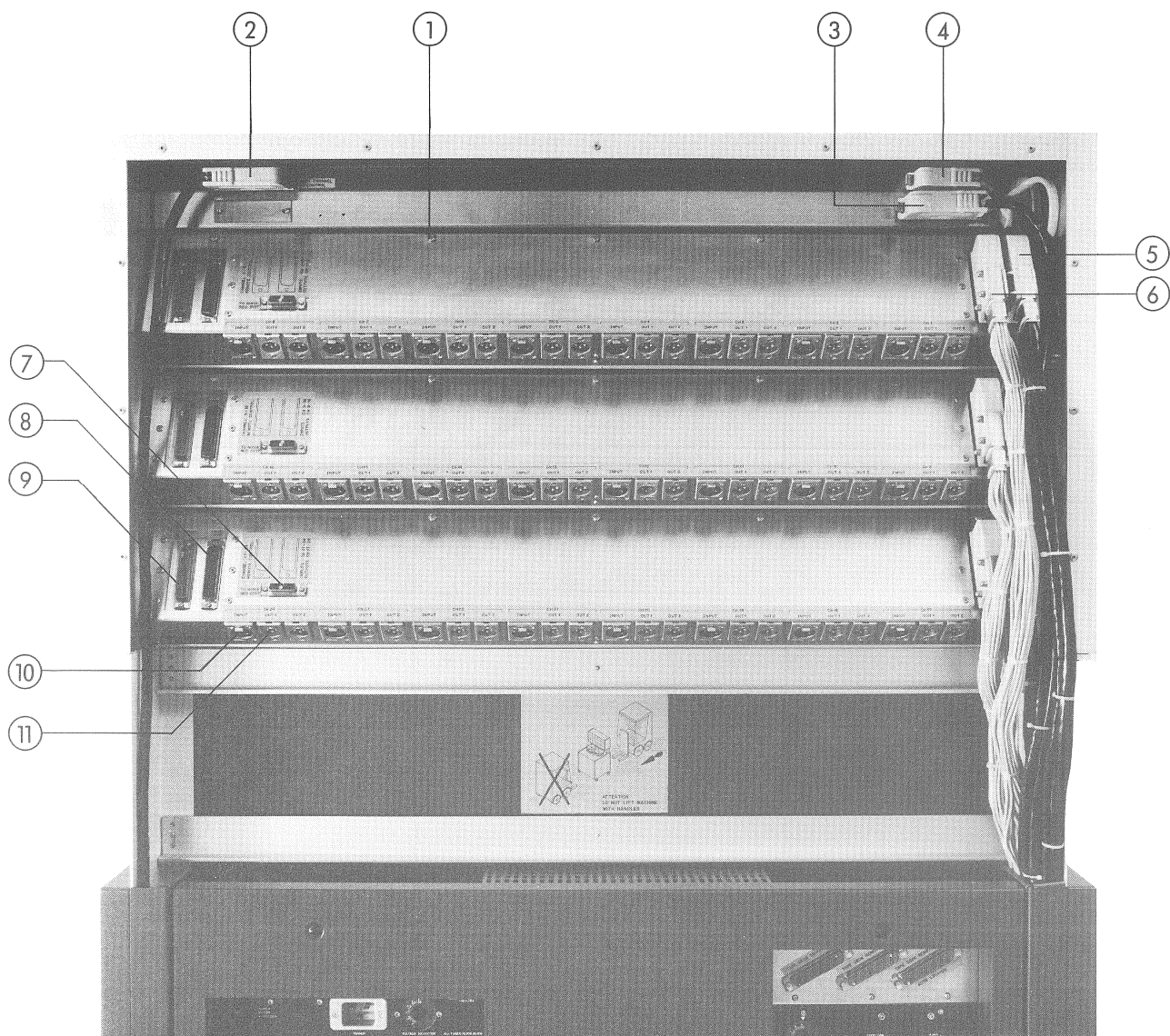
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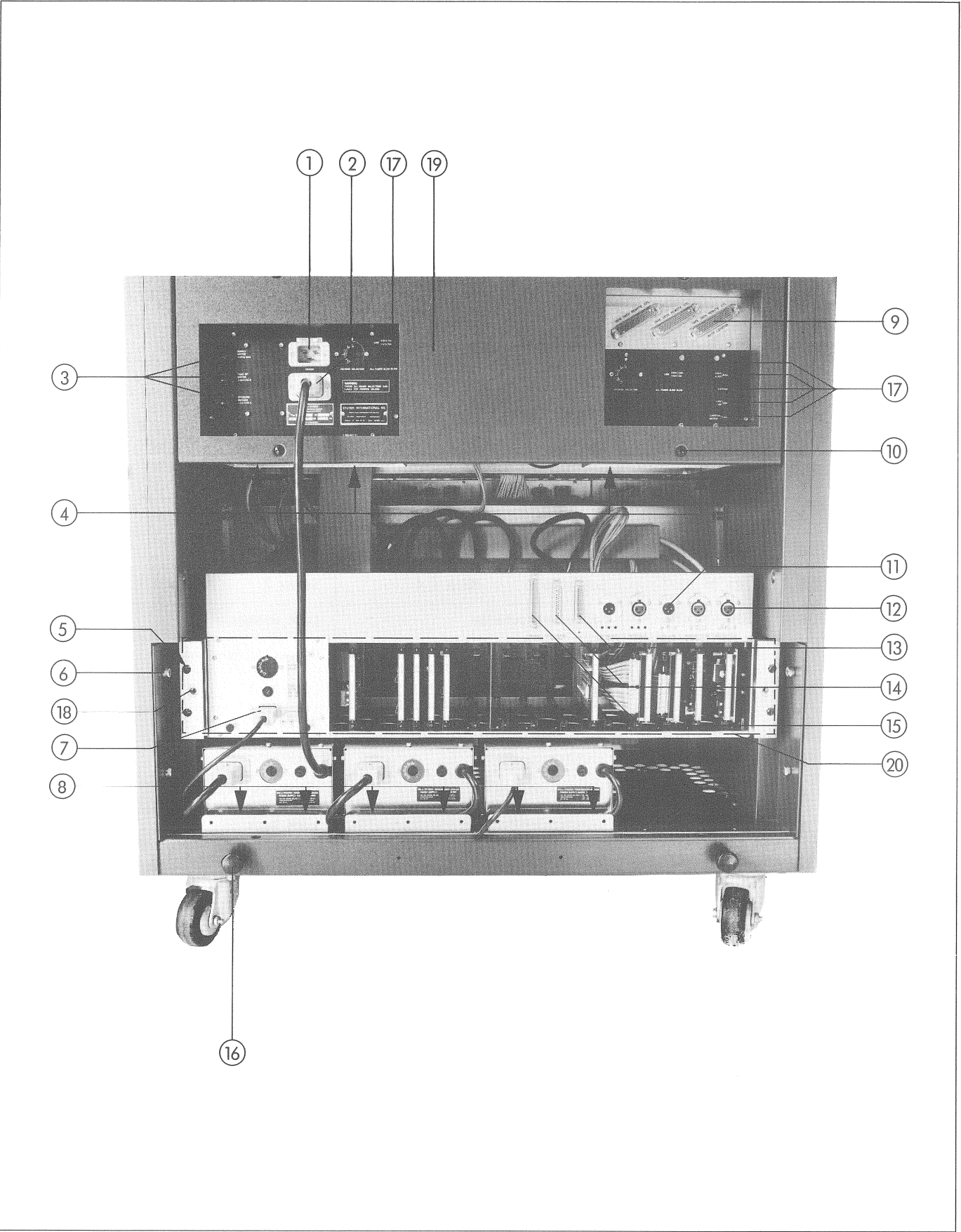
CONSOLE ELEMENTS 2" / 1"



CONSOLE ELEMENTS 2" / 1"

INDEX	QTY	ORDER NUMBER	BEZEICHNUNG	PART NAME
01	15	33.02.0110	Verschlusszapfen	Lock stud
to above	15	33.02.0180.	Haltescheibe	Lock washer
	15	33.02.0191	Haltenocken	Dog
02	1	54.02.0443	Stecker	Connector
to above	1	54.02.0469	Haube kompl.	Cap compl.
03	1	54.02.0449	Stecker	Connector
to above	1	54.02.0463	Haube kompl.	Cap compl.
04	1	54.02.0447	Stecker	Connector
to above	1	54.02.0461	Haube kompl.	Cap compl.
05	3	54.02.1110	Stecker	Connector
to above	3	1.180.615.01	Spezial-Haube kompl.	Cap special compl.
06	3	54.02.1110	Stecker	Connector
to above	3	54.02.0463	Haube kompl.	Cap compl.
07	3	54.02.0441	Steckergehäuse	Connector housing
to above	6	54.02.0470	Verriegelungshaken	Lock hook
	6	21.01.0277	Schraube Z M2,5 x 4	Screw Z M2,5 x 4
	6	24.10.1025	Sicherungsscheibe	Lock washer
08	6	54.02.0449	Steckergehäuse	Connector housing
to above	12	54.02.0470	Verriegelungshaken	Lock hook
	12	21.01.0277	Schraube Z M2,5 x 4	Screw Z M2,5 x 4
	12	24.10.1025	Sicherungsscheibe	Lock washer
09	6	54.02.1105	Steckergehäuse	Connector housing
to above	12	54.02.0470	Verriegelungshaken	Lock hook
	12	21.01.0277	Schraube Z M2,5 x 4	Screw Z M2,5 x 4
	12	24.10.1025	Sicherungsscheibe	Lock washer
10	24	54.02.0283	XLR-Buchse 3-pol J	XLR-jack 3-pol f
to above	48	21.27.3354	Schraube LS,KS M3 x 6	Screw LS,KS M3 x 6
11	48	54.02.0282	XLR-Stecker 3-pol P	XLR-plug 3-pol m
to above	96	21.27.3354	Schraube LS,KS M3 x 6	Screw LS,KS M3 x 6

CONSOLE ELEMENTS 2" / 1"

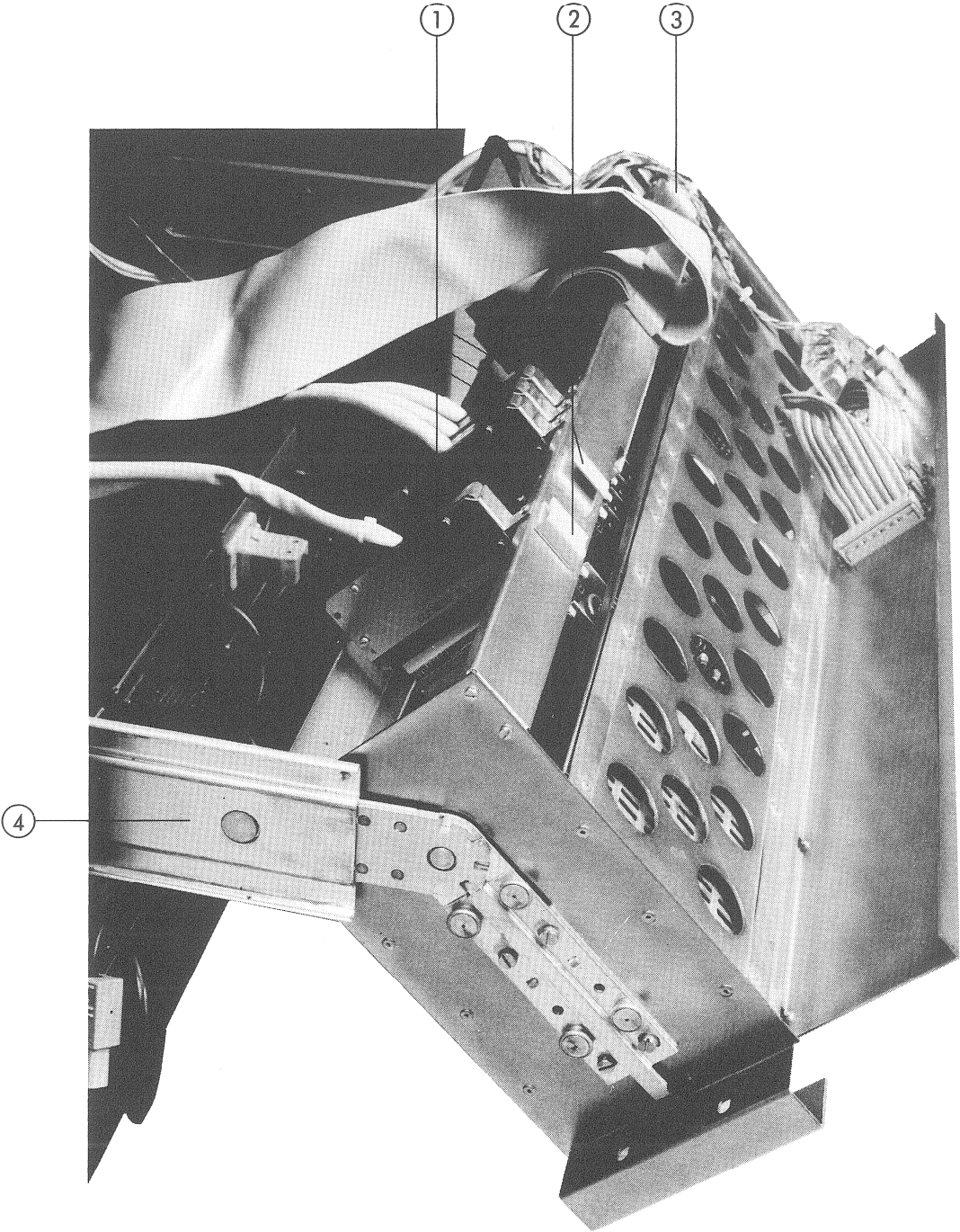


CONSOLE ELEMENTS 2" / 1"

INDEX	QTY	ORDER NUMBER	BEZEICHNUNG	PART NAME
01	1	54.04.0111	Apparatestecker 3-pol	Connector 3-pol
to above	2	21.51.2355	Senkschraube IS M3 x 8	Countersunk screw IS M3 x 8
02	1	54.04.0112	Apparatestechdose 3-pol	Mains plug 3-pol
to above	2	21.51.2355	Senkschraube IS M3 x 8	Countersunk screw IS M3 x 8
03	3	53.03.0108	Sicherungshalter	Fuse holder
to above	3	21.01.0265	Sicherung 20A	Fuse 20A
04	8	21.53.0454	Schraube Z,IS M4 x 6	Screw Z,IS M4 x 6
to above	8	24.16.1040	Sicherungsscheibe	Lock washer
05	4	21.08.2521	Senkschraube M5 x 14	Countersunk screw M5 x 14
to above	4	1.010.015.23	Spez. U-Scheibe	Spec. washer
06	4	21.53.0621	Schraube Z,IS M8 x 14	Screw Z,IS M8 x 14
to above	4	24.16.1080	Sicherungsscheibe	Lock washer
07	1	1.180.526.00	Netzkabel Exp. Unit kompl.	Mains cable Exp. unit compl.
08	6	21.53.0454	Schraube Z,IS M4 x 6	Screw Z,IS M4 x 6
to above	6	24.16.1040	Sicherungsscheibe	Lock washer
09	3	54.02.1110	Steckergehäuse	Connector housing
to above	6	54.02.0470	Verriegelungshaken	Lock hook
	6	21.01.0277	Schraube Z M2,5 x 4	Screw Z M2,5 x 4
	6	24.16.1025	Sicherungsscheibe	Lock washer
10	4	33.02.0333	Kunststoffschnäpper	Plastic snap
to above	4	33.02.0303	Muffe	Snap holder
11	2	54.02.0276	XLR-Stecker 3-pol P	XLR-plug 3-pol m
to above	6	21.51.8354	Schraube LS M3 x 6	Screw LS M3 x 6
12	3	54.02.0277	XLR-Buchse 3-pol J	XLR-jack 3-pol f
to above	9	21.51.8354	Schraube LS M3 x 6	Screw LS M3 x 6
13	1	54.01.0627	Flachkabelstecker P	Flat cable connector m
to above	2	54.02.0470	Verriegelungshaken	Lock hook
	2	21.01.0280	Schraube Z M2,5 x 8	Screw Z M2,5 x 8
	2	24.16.1025	Sicherungsscheibe	Lock washer
14	1	54.01.0631	Flachkabelstecker J	Flat cable connector f
to above	2	54.02.0470	Verriegelungshaken	Lock hook
	2	21.01.0280	Schraube Z M2,5 x 8	Screw Z M2,5 x 8
	2	24.16.1025	Sicherungsscheibe	Lock washer
15	1	54.01.0628	Flachkabelstecker P	Flat cable connector m

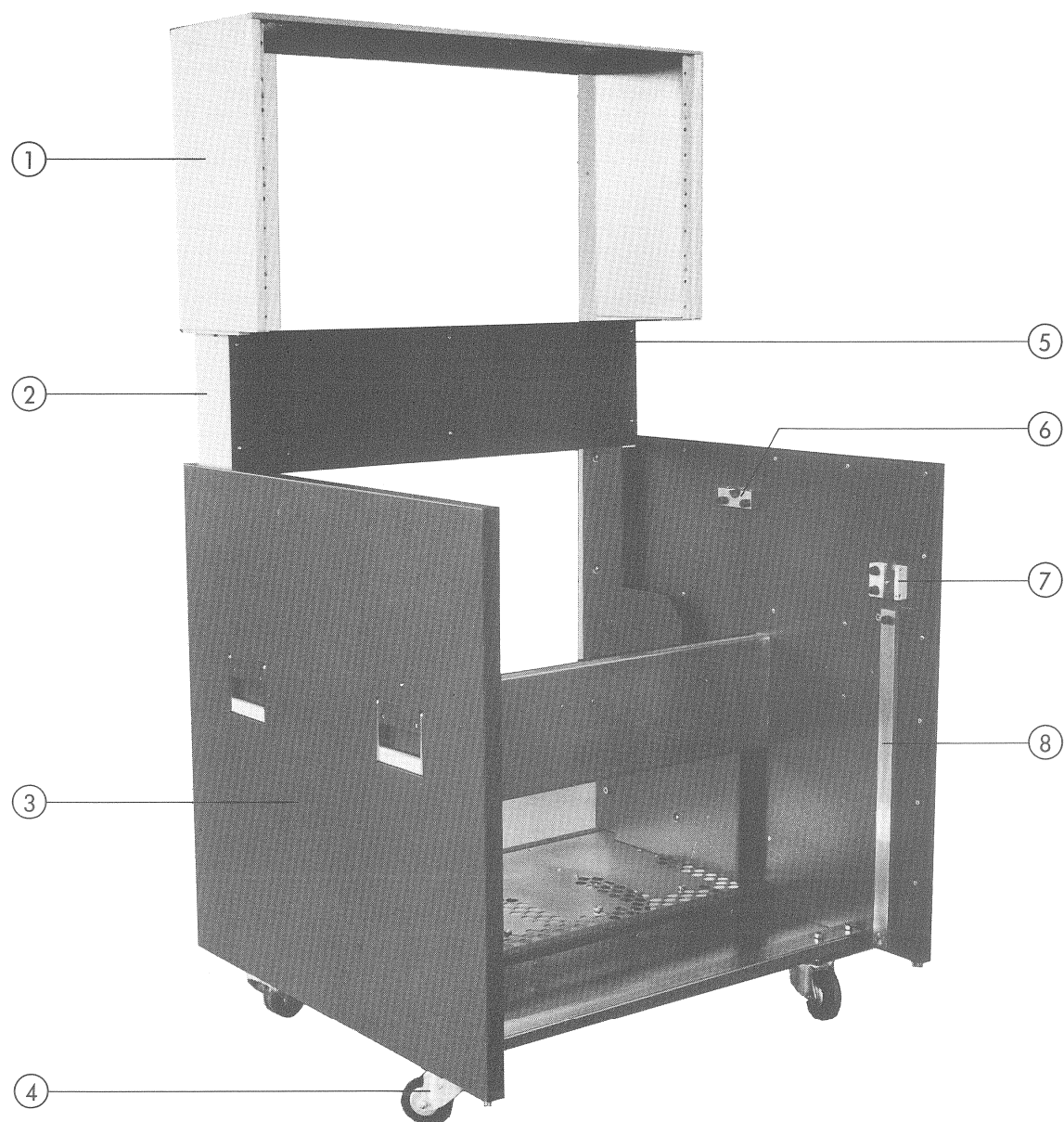
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CONSOLE ELEMENTS 2" / 1"



[illegible]

CONSOLE ELEMENTS 2" / 1"



CONSOLE ELEMENTS 2" / 1"

INDEX	QTY	ORDER NUMBER	BEZEICHNUNG	PART NAME
01	1	1.038.522.00	VU-Meter Aufbau 16/24 CH	VU-meter assembly 16/24 CH
		1.038.520.00	VU-Meter Aufbau 8 CH	VU-meter assembly 8 CH
to above	6	21.53.0457	Schraube Z,IS M4 x 12	Screw Z,IS M4 x 12
	6	24.16.1040	Sicherungsscheibe	Lock washer
02	1	1.038.508.00	Stütze rechts kompl.	Support right compl.
to above	1	1.038.509.00	Stütze links kompl.	Support left compl.
	4	21.53.0621	Schraube Z,IS M8 x 14	Screw Z,IS M8 x 14
	4	24.16.1080	Sicherungsscheibe	Lock washer
03	1	1.038.500.00	Konsole kompl. 16/24 CH	Console compl. 16/24 CH
		1.038.501.00	Konsole kompl. 8 CH	Console compl. 8 CH
04	4	33.04.0220	Lenkrolle	Guide roller
to above	12	21.53.0621	Schraube Z,IS M8 x 14	Screw Z,IS M8 x 14
	4	21.53.0617	Schraube Z,IS M8 x 45	Screw Z,IS M8 x 45
	4	22.01.8080	6Kt-Mutter M8	Hex. nut M8
	4	23.01.2084	U-Scheibe	Washer
	20	24.16.1080	Sicherungsscheibe	Lock washer
05	1	1.038.500.02	Abdeckblech vorne	Front cover
to above	6	21.53.8457	Schraube IS M4 x 12	Screw IS M4 x 12
	6	24.16.2040	Fächerscheibe	Lock washer
06	2	1.038.500.10	Lagerunterteil	Bearing brass
to above	4	21.53.0614	Schraube Z,IS M8 x 30	Screw Z,IS M8 x 30
	4	23.01.2084	U-Scheibe	Washer
	4	24.16.1080	Sicherungsscheibe	Lock washer
07	2	1.038.500.07	Riegelhalter	Sliding bolt holder
to above	2	1.08.500.09	Riegel	Sliding bolt
	2	1.038.500.08	Achse	Shaft
	2	1.077.120.04	Scheibe	Washer
	2	24.16.3040	Wellensicherung	Circlip
	2	1.080.225.06	Druckfeder	Pressure spring
	4	21.53.0614	Schraube Z,IS M8 x 30	Screw Z,IS M8 x 30
	4	23.01.2084	U-Scheibe	Washer
	4	24.16.1080	Sicherungsscheibe	Lock washer
08	1	1.038.500.20	Schiene rechts	Slipper right
to above	1	1.038.500.19	Schiene links	Slipper left

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10. BUS ANALYZER

10.1

Funktionsbeschreibung

Der Bus Analyzer ist ein Service-Hilfsmittel, mit seiner Hilfe ist es möglich, den Inhalt von adressierbaren Speicherbytes zu lesen. Der Prozessor Bus der A800 setzt sich aus einem 16 Bit Adress Bus und einem 8 Bit Daten Bus zusammen. Die Adresse kann mit Rändelschaltern eingestellt werden. Sobald die gewählte Adresse auf dem Bus "anliegt", wird der Inhalt des betreffenden Speicherbytes mittels LEDs angezeigt.

Zusätzlich besteht die Möglichkeit, die angezeigten Daten mit einem vorwählbaren Muster zu vergleichen. Wenn der Speicherinhalt an der gewählten Adresse nicht mit dem eingestellten Muster übereinstimmt, werden die "falschen Daten" gespeichert und die gelbe "FAIL" LED leuchtet auf.

Das Prozessor Programm der A800 ist in 8 Moduln gegliedert. Modul 1 definiert den Speicherbereich, in welchem die Laufwerkfunktionen gespeichert sind.

Während einer Programmschleife wird eine gewählte Laufwerkfunktion an einem Speicherplatz abgelegt, die mit ihrem Namen gekennzeichnet ist. Von dort wird die Funktion später zur Ausführung abgerufen.

Beispiele:

Wenn die Taste "Fast Rewind" gedrückt wird, ändert der Inhalt des Registers 0027, gekennzeichnet mit S-REW, von 00000000 auf 00000000 solange die Taste gedrückt bleibt.

Register 005B enthält die höherwertigen 8 Bit der momentanen Bandgeschwindigkeit.

Register 005C enthält die niederwertigen 8 Bit der momentanen Bandgeschwindigkeit.

Damit die Bandgeschwindigkeit nicht beliebig hoch wird, werden die Inhalte der beiden obigen Register mit dem Sollwert vom Prozessor verglichen, der in den Registern 00B6 und 00B7 gespeichert ist. Register 00B6 enthält die Bandgeschwindigkeit in "FAST REWIND" und den Bandzug in "FAST FORWARD" Mode, Register 00B7 die analogen Informationen, also die Bandgeschwindigkeit in "FAST FORWARD" und den Bandzug in "FAST REWIND" Mode (gilt nur für Maschinen mit MPU Karte 1.180.484).

10. BUS ANALYZER

10.1

Functional description

The bus analyzer is a service aid and enables us to read the content of addressable memory bytes. As we know the processor bus consists of a 16 bit address bus and an 8 bit data bus. The address can be selected with thumbwheel switches and as soon as the selected address is "on" the bus, the according data is displayed by light emitting diodes.

Additionally we can compare the displayed data with a given pattern, selected by the "data compare" switches. In the moment when the data on the bus at the selected address, does not correspond to the selected data, wrong data is stored and the yellow diode is lit.

The A800 processor's program is divided into eight modules. Module 1 defines the memories, in which the tape deck functions are stored.

During a program loop, a function is stored in a memory place, labelled with its name, from which it is read out for execution:

Examples:

Pressing of the "fast rewind" key causes the register 0027, labelled with S-REW, to go from 00000000 to 00000000 as long as the key is depressed.

Register 005B contains the higher 8 bit of the actual tape speed.

Register 005C contains the lower 8 bit of the actual tape speed.

For limiting the tape speed, the register 005B resp. 005C are compared with the prescribed tape speed from the processor which are stored in 00B6 resp. 00B7. 00B6 shows the tape speed in FRW and the tape tension in FF mode, 00B7 vice versa (only for machines equipped with MPU 1.180.484...).

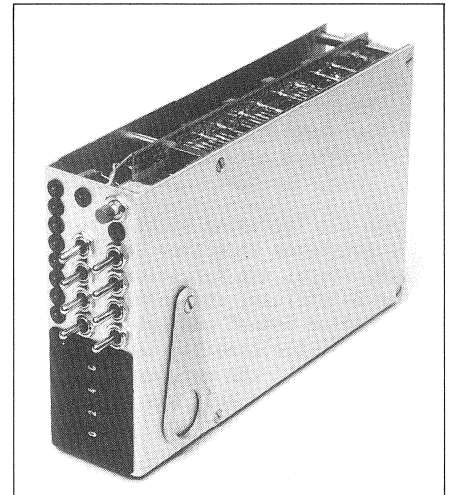


Fig. 10.1

Bus Analyzer Best. No. 10.023.002.00
Bus Analyzer Order No. 10.023.002.00

Der Bus Analyzer ist für folgende Anwendungen konzipiert:

With the analyzer you can perform the following operations:

1. Anzeige von Daten auf dem Data Bus. Die gewünschte Adresse wird mit Rändelschaltern vorgewählt.
 2. Vergleich der angezeigten Daten mit einem wählbaren Bitmuster. Der Vergleich kann mit logisch "0" oder "1" erfolgen.
 3. Wenn die Testdaten nicht mit dem vorgegebenen Bitmuster übereinstimmen, stoppt die Vergleichsschaltung den Datenfluss, speichert die "fehlerhaften Daten" und zeigt sie mit LEDs an. Gleichzeitig leuchtet die gelbe "FAIL" LED auf. Um weiterzuarbeiten, muss erst die "RESET" Taste gedrückt werden.
 4. Die grüne LED leuchtet für 10ms, wenn die Adresse auf dem Address Bus mit der vorgewählten Adresse übereinstimmt.
 5. Der Bus Analyzer kann auch mit anderen μP Systemen verwendet werden. Die Anpassung an andere Systeme erfolgt mit Hilfe von DIL -Schaltern auf dem Analyzer Print.
1. Display the data bus on LEDs. A thumbwheel switch allows the selection of the required address.
 2. Comparison of the displayed data with a data pattern separately selected by a switch for each bit. Comparison with low or with high level is possible.
 3. In case the selected data does not correspond to the displayed data, the comparison section inhibits the flowing of new data, stores the last incorrect data and displays it. Also the yellow "FAIL" LED is lit. For further operation of the analyzer depress the "RESET" button.
 4. The green LED is activated during 10ms when the address on the address bus corresponds to the address selected by the thumbwheel switches.
 5. This bus analyzer can also perform above mentioned operations with other μP systems. Depending on the used system, the bus analyzer can easily be adapted by means of a DIL switch array on the PCB.

10.2 Einstellen der DIL-Schalter

- Schalter 1 : Address Bus "LOW" oder "HIGH" aktiv.
- Schalter 2 : Lesen/Schreiben "LOW" oder "HIGH" aktiv.
- Schalter 4,5: Lesen/Schreiben "Pull up" oder "Pull down".
- Schalter 3 : Pull up oder Pull down

ACHTUNG:

Schalter 3 nicht einschalten, wenn die Schalter 4 und 5 ebenfalls eingeschaltet sind, sonst wird der Lese/schreibdraht des μP -Systems auf Masse gelegt (sofern er angeschlossen ist).

Schalter 6,7: Normalerweise unbenutzt

Schalter 8 : Freigeben oder Sperren des Interrupt-Ausgangs (falls angeschlossen)

10.2 DIL-Switch Settings

- Switch 1 : Select address bus "LOW" or "HIGH" active.
- Switch 2 : Select read/write "LOW" or "HIGH" active.
- Switch 4,5: Select read/write or pulled up/down
- Switch 3 : Select pull up or pull down

CAUTION:

Don't switch "ON" switch 3, when the switches 4 and 5 are also "ON" otherwise you will ground the read/write output of the μP system (if connected).

Switch 6,7: Normally useless

Switch 8 : Enable/disable the interrupt output (if connected)

10.3 Bedienungsanleitung

10.3.1 Installation

1. Tonbandmaschine ausschalten.
2. Bus Analyzer zwischen MPU Karte und Switching Regulator einstecken (siehe Fig. 10.2).
3. A800 einschalten.
4. Mit Hilfe des Adress Listing (siehe Abschnitt 10.4) kann die gewünschte Adresse gefunden und danach mit den Rändelschaltern eingestellt werden.
5. Alle Datenvergleichsschalter in die Mittelstellung setzen (Don't care) und "RESET" Taste drücken (siehe Fig. 10.4).
6. Die grüne LED leuchtet und zeigt damit die Betriebsbereitschaft des Analyzers an.

10.3 Operating instructions

10.3.1 Installation

1. Switch off the machine.
2. Insert the bus analyzer between the MPU-board and the switching regulator (see figure 10.2).
3. Switch on the recorder.
4. Select the required address with the thumbwheel switches by using the address listing (section 10.4).
5. Put all data compare switches in their central position ("don't care") and then press the "RESET" button (see fig. 10.4).
6. The green diode will light up and indicate that the analyzer is ready for operation.

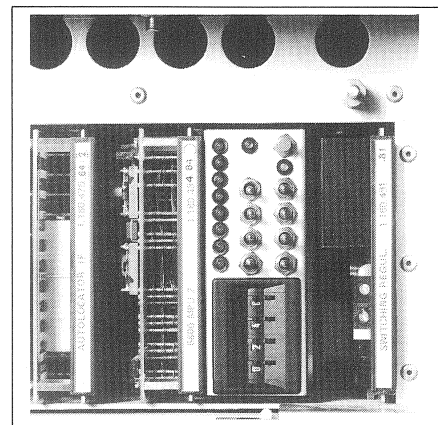


Fig. 10.2

10.3.2 Arbeiten mit dem Bus Analyzer

1. Benutzung des Adress Listings

Beispiel:

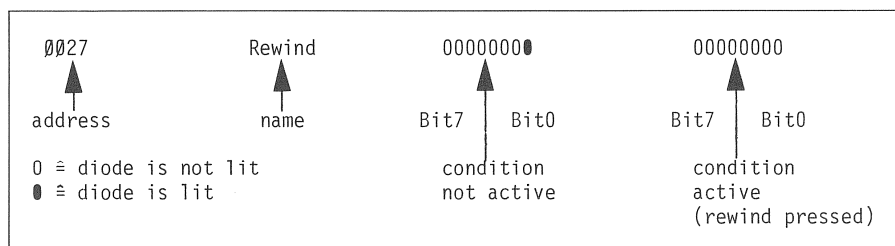


Fig. 10.3

10.3.2 How to work with the bus analyzer

1. Use of the address listing

Example:

2. Vergleich eines Registerinhalts mit dem Adress Listing

1. Gewünschte Adresse mit Hilfe der Rändelschalter einstellen.
2. Datenvergleichsschalter in Mittelstellung setzen.
3. "RESET" Taste drücken.
4. Die LED zeigen den Inhalt des an gewählten Registers an.

2. Compare the content of a register with the address listing

1. Select the required address with the thumbwheel switches.
2. Data compare switches to position "don't care" (middle position).
3. Press "RESET".
4. Data display shows the data which correspond to the selected address.

3. Auffinden von transienten Fehlern

Wenn ein Fehler so kurzzeitig auftritt, dass er nur vom Prozessor erkannt wird, kann er oft nicht auf dem LED Display festgestellt werden.
Nutzen Sie in diesem Fall die Datenvergleichsmöglichkeit aus.

1. Anwählen des gewünschten Registers mit Hilfe der Rändelschalter.
2. Maschine in der gewünschten Betriebsart starten.
3. Datenvergleichsschalter auf den Code einstellen, den Sie mit Hilfe des Adress Listings für die entsprechende Betriebsart ermittelt haben.
4. "RESET" Taste drücken.
5. Sobald ein Bitmuster auf dem Datenbus erscheint, das nicht mit der vorgewählten Kombination übereinstimmt, leuchtet die gelbe "FAIL" LED auf.

Beispiel:

Die Maschine ist im schnellen Vorlauf, und Sie vermuten, dass der Bandbewegungssensor verstellt ist (Die Phasenverschiebung zwischen den Signalen QP-DIR 1 und QP-DIR 2 beträgt nicht 90°, was eine falsche Bandlaufrichtungsinformation zur Folge haben kann).

1. Anwählen der Adresse 0023 (Richtungsänderung) mit den Rändelschaltern.
2. Vergleichsschalter für Bit0 auf 0 setzen.
3. "RESET" Taste drücken.
4. Sobald die Daten "Richtungsänderung" auf dem Bus anliegen, wird die LED für Bit0 aufleuchten, gleichzeitig leuchtet die gelbe "FAIL" LED auf.

3. Looking for temporary faults

If an error occurs only momentarily, you won't see it just by watching the data display; but the processor is fast enough to recognize the error.
In this case you use the data compare facility.

1. Select the required address with the thumbwheel switches.
2. Put the recorder in the condition you require.
3. Set the compare switches to the position which you have determined by means of the address listing.
4. Press "RESET".
5. As soon as a value appears which does not correspond to the selected pattern, the yellow diode will light up.

Example:

The machine is in fast forward and you suspect the move sensor to be misadjusted (phase shift between QP-DIR 1 and QP-DIR 2 is not 90°, which can cause a wrong direction information).

1. Select address 0023 direction change (see section 10.4.10).
2. Set compare switch Bit0 to compare with 0.
3. Press "RESET".
4. As soon as "dir. change" appears on the bus, Bit0 will remain lit and also the yellow diode "FAIL" will light up.

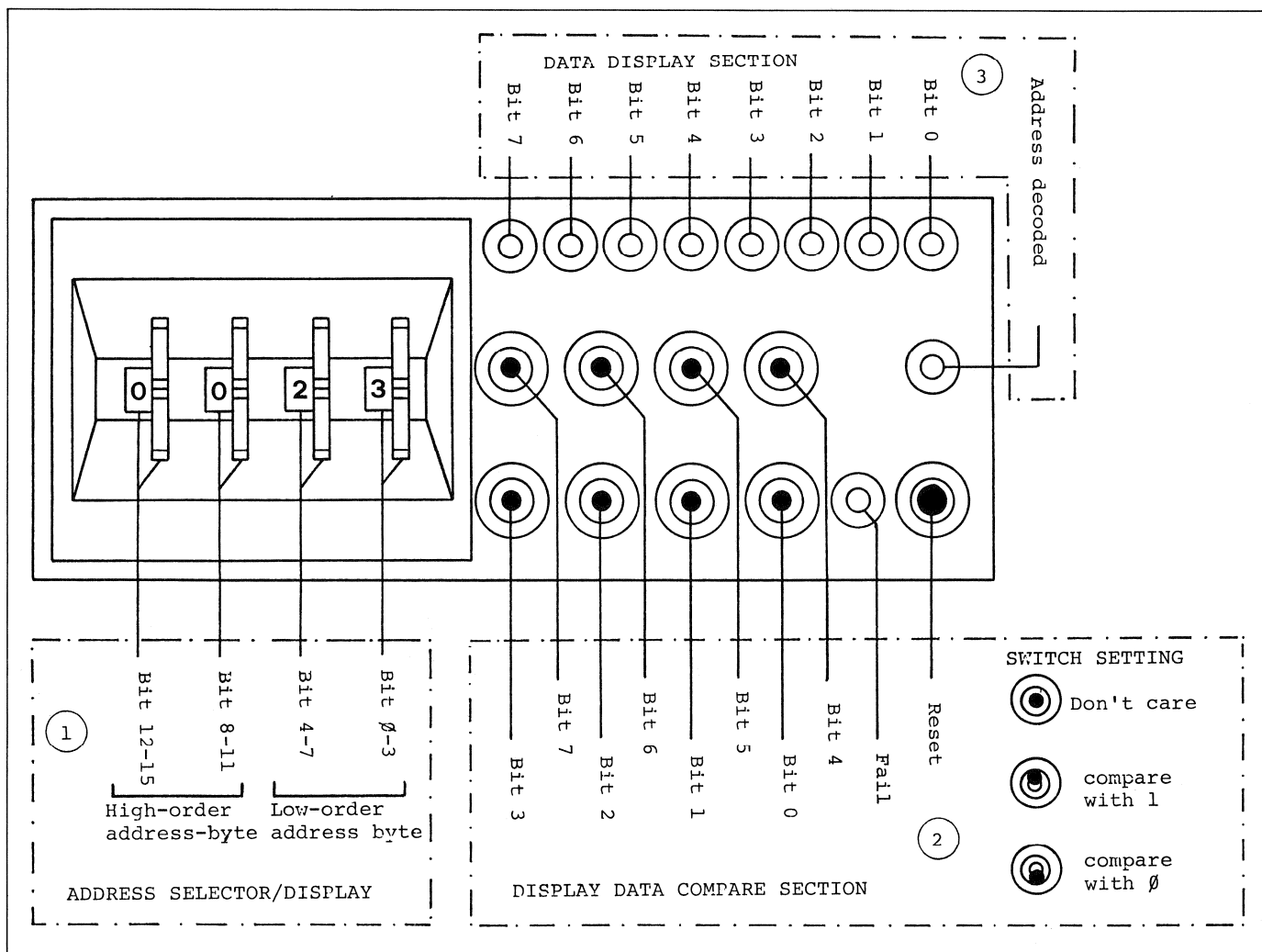


Fig. 10.4

10.4 Address Listing

10.4.1 A800 Tape Deck Keyboard Input

		not active		active	
		Bit 7	Bit 0	Bit 7	Bit 0
0027	Rewind	00000000	00000000	00000000	00000000
0028	Forward	00000000	00000000	00000000	00000000
0029	Play	00000000	00000000	00000000	00000000
002A	Stop	00000000	00000000	00000000	00000000
002B	Record	00000000	00000000	00000000	00000000
002C	Edit	00000000	00000000	00000000	00000000
002D	Zero Loc	00000000	00000000	00000000	00000000
002F	0 (Counter reset)	00000000	00000000	00000000	00000000
009C	Set varispeed	00000000	00000000	00000000	00000000
009D	Set address	00000000	00000000	00000000	00000000
009E	Set timer	00000000	00000000	00000000	00000000
009B	Up >	00000000	00000000	00000000	00000000
	Dn >	00000000	00000000	00000000	00000000
	Up >>	00000000	00000000	00000000	00000000
	Dn >>	00000000	00000000	00000000	00000000

while button is pressed

1st pressing: active
2nd pressing: not active

while button is pressed

10.4.2 TLS Tape Deck Keyboard Input

00CC	Rewind	00000000	00000000
00CD	Forward	00000000	00000000
00CE	Play	00000000	00000000
00D0	Record	00000000	00000000
00D1	Edit	00000000	00000000
00DB	TLS-Mute	00000000	00000000
00CF	Stop generate a pulse of	00000000	00000000

10.4.3 Other TLS Signals

		Bit 7	Bit 0	Bit 7	Bit 0
0015	TLS Power on	00000000		0000●000	
0016	TLS Master int. connected?	00000000		00●00000	
00E4	TLS Bias on	0000●000		00000000	
00E5	TLS Erase on				

10.4.4

Combined A800 and TLS Keyboard Input

		not active	active
006D	Rewind	0000000●	00000000
006E	Forward	000000●0	00000000
006F	Play	00000●00	00000000
0070	Stop	0000●000	00000000
0071	Record	000●0000	00000000
0072	Edit	00●00000	00000000
0073	Any locator on	0●000000	00000000
0075	0 (Counter reset)	●0000000	00000000
0076	Edit-Knob-switch	0000000●	00000000

while button is pressed

10.4.5

Tape Counter Data Register

0081	- (Minus sign) active	●●●●●●●●	0000●0●0
0082	Hours, units		0000####
0083	Minutes, tens		0000####
0084	Minutes, units		0000####
0085	Seconds, tens		0000####
0086	Seconds, units		0000####

10.4.6

Address Locator Data Register

0087	- (Minus sign)	●●●●●●●●	0000●0●0
0088	Hours		0000####
0089	Minutes, tens		0000####
008A	Minutes, units		0000####
008B	Seconds, tens		0000####
008C	Seconds, units		0000####

10.4.7

Variospeed Register (%)

		Bit 7	Bit 0	Bit 7	Bit 0
0095	- (Minus sign) active	●●●●●●●●		0000●0●0	
0096	%, tens	00000####			
0097	%, units	0000####			
0098	- (Minus sign) active	●●●●●●●●		0000●0●0	
0099	HT, tenths	00000####			
009A	HT, units	00000####			

10.4.8

Audio Section Switches Input Registers

		not active	active
0032	Mastersafe	000000●0	00000000
007B	Code channel on		
007D	Code channel rec.	0000●000	00000000
00E9	Ready/record channel 1	00000000	0000000●
00E9	Ready/record channel 2	00000000	000000●0
00E9	Ready/record channel 3	00000000	00000●00
00E9	Ready/record channel 4	00000000	0000●000
00E9	Ready/record channel 5	00000000	000●0000
00E9	Ready/record channel 6	00000000	00●00000
00E9	Ready/record channel 7	00000000	0●000000
00E9	Ready/record channel 8	00000000	●0000000
00EA	Ready/record channel 9	00000000	0000000●
00EA	Ready/record channel 10	00000000	000000●0
00EA	Ready/record channel 11	00000000	00000●00
00EA	Ready/record channel 12	00000000	0000●000
00EA	Ready/record channel 13	00000000	000●0000
00EA	Ready/record channel 14	00000000	00●00000
00EA	Ready/record channel 15	00000000	0●000000
00EA	Ready/record channel 16	00000000	●0000000
00EB	Ready/record channel 17	00000000	0000000●
00EB	Ready/record channel 18	00000000	000000●0
00EB	Ready/record channel 19	00000000	00000●00
00EB	Ready/record channel 20	00000000	0000●000
00EB	Ready/record channel 21	00000000	000●0000
00EB	Ready/record channel 22	00000000	00●00000
00EB	Ready/record channel 23	00000000	0●000000
00EB	Ready/record channel 24	00000000	●0000000

10.4.9

Other Switches Sensor Status

		Bit 7	Bit 0	Bit 7	Bit 0
0025	Tape deck remote on	●0000000		00000000	
0033	Power switch, low speed	00000●00		00000000	
0037	Tape end, headblock photocell	00000●00		00000000	
0038	Cover open, headblock	000●0000		00000000	
0039	Endswitch, Edit-solenoid	00000000		00000●00	
003A	Endswitch, Play-solenoid	00000000		0000●000	
003B	Tape end, tape tension photocell	00000000		0000●000	

10.4.10

Status Registers And Others

not active

active

condition active

ØØ5B	Actual tape speed, high order byte		ØØØØØØØØ
ØØ5C	Actual tape speed, low order byte		ØØØØØØØØ
ØØ5C	During play or Rec at 30 ips		ØØØØØØØØ
	During play or Rec at 15 ips		ØØØØØØØØ
	During play or Rec at 7,5 ips		ØØØØØØØØ
ØØ54	Move status	00000000	ØØØØØØØØ
ØØA1	Varispeed synth. constant,		
	high order $\pm$ 0 %		ØØØØØØØØ
	+ 55 %		ØØØØØØØØ
	- 35 %		ØØØØØØØØ
ØØA2	Varispeed synth. constant,		
	low order $\pm$ 0 %		ØØØØØØØØ
	+ 55 %		ØØØØØØØØ
	- 35 %		ØØØØØØØØ
ØØ22	Moving direction Forward, Stop,		ØØØØØØØØ
	Backward		ØØØØØØØØ
ØØ23	Direction change generates		
	following short pulse		ØØØØØØØØ
ØØ24	Tape speed > Play speed	00000000	ØØØØØØØØ
ØØ4C	Brake solenoid activated	00000000	ØØØØØØØØ
ØØ4D	Cut solenoid activated	ØØØØØØØØ	ØØØØØØØØ
ØØ4E	Press solenoid activated	ØØØØØØØØ	ØØØØØØØØ
ØØ56	Move direction to be achieved,		
	Forward		ØØØØØØØØ
	Backward		ØØØØØØØØ

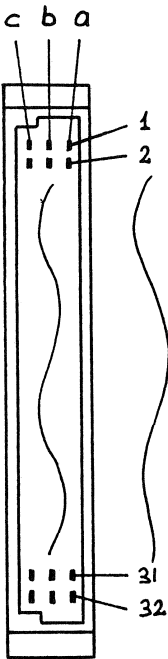
		not active		active	
		Bit	Bit	Bit	Bit
		7	0	7	0
0055	Capstan freq. division ratio / 30 ips			000000	00
	for 15 ips			000000	00
	7,5 ips			000000	00
* 00B6	EBUF 40 left hand spooling motor				
	speed/tape tension			000000	00
* 00B7	EBUF 41 right hand spooling motor				
	speed/tape tension			000000	00
006B	Counter for flashing stop	00000000		000000	00
000C	Counter for varispeed flashing	00000000		000000	00
000D	Reel motor power enabled	00000000		000000	00
000E	Tape deck function change:	{ this address is selected if function changes: green LED flashes			
000F	Division ratio time display at				
	7,5 ips			000000	00
	15 ips			000000	00
	30 ips			000000	00
001D	Current activity: Stop			000000	00
	Forward			000000	00
	Rewind			000000	00
	Play			000000	00
	Record			000000	00
	Edit			000000	00
	O-Loc			000000	00
	Add Loc			000000	00
	Tape out			000000	00

* Variable Werte nur bei MK II

10.4.11

Channel Record Status On			not active		active	
			Bit 7	Bit 0	Bit 7	Bit 0
00F2	Channel 1		00000000		00000000	●
	Channel 2		00000000		00000000	●
	Channel 3		00000000		00000000	●
	Channel 4		00000000		00000000	●
	Channel 5		00000000		00000000	●
	Channel 6		00000000		00000000	●
	Channel 7		00000000		00000000	●
	Channel 8		00000000		00000000	●
00F3	Channel 9		00000000		00000000	●
	Channel 10		00000000		00000000	●
	Channel 11		00000000		00000000	●
	Channel 12		00000000		00000000	●
	Channel 13		00000000		00000000	●
	Channel 14		00000000		00000000	●
	Channel 15		00000000		00000000	●
	Channel 16		00000000		00000000	●
00F4	Channel 17		00000000		00000000	●
	Channel 18		00000000		00000000	●
	Channel 19		00000000		00000000	●
	Channel 20		00000000		00000000	●
	Channel 21		00000000		00000000	●
	Channel 22		00000000		00000000	●
	Channel 23		00000000		00000000	●
	Channel 24		00000000		00000000	●
07C	Code channel	narrow	●●●●●●●●	wide	00000000	

Front view



Address bit	0	Pin	17 a
Address bit	1	Pin	17 c
Address bit	2	Pin	18 a
Address bit	3	Pin	18 c
Address bit	4	Pin	19 a
Address bit	5	Pin	19 c
Address bit	6	Pin	20 a
Address bit	7	Pin	20 c
Address bit	8	Pin	21 a
Address bit	9	Pin	21 c
Address bit	10	Pin	22 a
Address bit	11	Pin	22 c
Address bit	12	Pin	23 a
Address bit	13	Pin	23 c
Address bit	14	Pin	24 a
Address bit	15	Pin	24 c

Data bit	0	Pin	13 a
Data bit	1	Pin	13 c
Data bit	2	Pin	14 a
Data bit	3	Pin	14 c
Data bit	4	Pin	15 a
Data bit	5	Pin	15 c
Data bit	6	Pin	16 a
Data bit	7	Pin	16 c

Interrupt output	Pins	21 b
Read/write	Pin	25 c
Clock	Pin	27 a
Address valid	Pin	27 c
Ground	Pins	31 a,b,c
VCC (+5V)	Pins	32 a,b,c